THE IRON TRADE REVIEW

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Easier Conditions in Finished Material Markets

With Weakness in Some Districts in Pig Iron—Heavy Railroad Buying Continues — Coke Prices Decline

Leading steel companies report that business for January will be about equal to December and that they could have booked heavy tonnages for delivery far in the future if they had desired, but they prefer catching up on deliveries before making many more contracts. Some mills are making more prompt deliveries and conditions in general are easier.

Pig Iron

Weakness of the southern pig iron has continued and the tonnage being offered for sale at $13.50, Birmingham, for No. 2, for first quarter and first half delivery, has apparently increased. Within the past few days, however, some makers in the south have reported improvement in prospects, with more buying developing in western and southwestern districts. Competition of southern iron is being felt in the north almost as far as Cleveland, but prices in the central west are being firmly adhered to. In eastern territory, there is more disposition to make concessions than there is in the west and several interests are shading the market more freely on attractive tonnages. Numerous sales of moderate tonnages have been made at full prices in the New York and Philadelphia districts.

Pig Iron Stocks

In judging present pig iron conditions, the fact that merchant pig iron stocks of the country have been greatly reduced the past year must be considered as a factor which strengthens the position of the merchant furnaces. At the beginning of the present year, the total stocks of iron on merchant yards were 616,000 tons, or the equivalent of only about one week's consumption. The reduction of stocks during the year was about 1,400,000 tons. This reduction fitly illustrates the heavy movement of iron from producers to consumers during the year. The full significance of this absorption of furnace stocks depends upon the extent to which the buyers have allowed this metal to accumulate in their yards. No accurate information as to consumers' stocks is obtainable, but from general indications of plant activity, it seems fair to assume that a very large percentage of this iron, which has disappeared from furnace stocks, has gone to meet actual consumptive needs. The stock of foundry iron alone decreased about 396,000 tons from Jan. 1, 1912, to Jan. 1, 1913. From Oct. 1, 1912, to Jan. 1, 1913, foundry stocks decreased 130,000 tons, there being 583,000 tons at the former date and 453,000 tons at the latter date. About 7,000 tons were exported from Birmingham, Ala., during December, and there is inquiry pending for a much larger tonnage in foreign lands.

Railway Buying

The Great Northern railroad has placed an order for 20,000 tons of rails, divided equally among the Pennsylvania, Cambria, Bethlehem and Lackawanna Steel companies, and will probably place an order for 10,000 additional tons. Other northwestern roads are still figuring on tonnages for this year and one has placed a moderate tonnage for 1914 delivery. The Pennsylvania Lines West have awarded the Pennsylvania Steel Co. 5,000 tons of Mayari Bessemer rails. The inquiry for miscellaneous lots is active. Argentine railroads, which have been unable to obtain desired deliveries of rails abroad, are again turning to American mills and are seeking to place about 150,000 tons. The Pennsylvania railroad is inquiring for 12,300 cars, and the Norfolk & Western for 7,000 cars, making a total of about 20,000 cars, for the steel material for which middle western steel makers are actively bidding. Chicago mills have just taken about 35,000 tons of steel for car builders in that district to cover new car orders. The Illinois Central has placed an order for 1,000 gondolas with the Pullman Co. Some railroads are finding that they did not place orders for rails last year early enough to insure desired deliveries this year.

Coke

The coke market has declined sharply and important operators are now offering to contract with furnaces in the east and central west at $3 per ton, while prices for prompt delivery are also lower for foundry and furnace grades. Lower prices are attributed largely to the heavy production and the fact that several furnaces have been compelled to blow out for relining. The old material market continues dull with prices very weak.

Let the Truth Be Known.

Detective William J. Burns, in an address before the Cleveland Chamber of Commerce, at noon Tuesday, made highly sensational charges against the National Erectors' Association and its commissioner, Walter S. Drew. Mr. Burns boldly asserted that the National Erectors' Association was to blame for the failure to convict "men higher up" in the atrocious dynamiting cases, of which the murders caused by the blowing up of the Los Angeles Times Building were the worst results. Mr. Burns charged the National Erectors' Association with failure to support him in collecting evidence for the conviction of the dynamiters, who were responsible, not only for the Los Angeles crime, but for countless dynamitings throughout the country. He declared that Drew is not only a "bum detective," but a "crook of the worst kind" who is willing to resort to unlawful means to accomplish his purpose.

These charges are serious in the highest degree.

If the National Erectors' Association stands for anything that is good, it is for the enforcement of the law. If it has been negligent in supporting those who are pursuing criminals, the public has a right to know that fact. If it is paying a salary to a man of the despicable and criminal character described by Detective Burns, that fact should be known and Drew should not only be removed from his position but punished as any other crook is punished. If, on the other hand, the charges are false, and Mr. Drew is not guilty as alleged, the country ought to know it. Then would Mr. Burns receive the condemnation which should be visited on a man who makes false charges.

No association connected in any way, directly or indirectly, with the iron trade should be tolerated for one minute, if it is guilty of such charges as those made by Detective Burns. Therefore, as a representative of the iron trade, THE IRON TRADE REVIEW insists that Detective Burns shall make his charges formally in writing and in detail before some impartial tribunal, in order that the National Erectors' Association and its commissioner shall have an opportunity fully to defend and purge themselves. We believe that all the testimony should be given in public and that the conclusions of the tribunal should be published to the world.

Action must be taken and taken quickly.

PITTSBURGH

Decided Slump in Coke Prices

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Jan. 28.

Officials of leading iron and steel interests in this district can see nothing but prosperity for the entire year, especially in the finished lines. Buying has fallen off considerably and yet mills have been unable to catch up in deliveries, as specifying has been fully as heavy as at any time in the past three months. There is no indication of cancellations being made and there seems to be no probability that prices for last half material will be lowered. The political situation continues to be a subject of much discussion and some anxiety is expressed relative to proposed changes in legislation.

The heavy buying of cars on the part of railroads in all sections of the country is indicative of continued prosperity. It is roughly estimated that more than 40,000 cars of miscellaneous types are involved in pending inquiries, and there are a number of excellent structural undertakings being figured upon.

The pig iron market has been quiet, but prices are firm, despite indications of softness in the south. The coke market, after being on an unusually high basis for three months has showed considerable weakness and spot furnace fuel is now selling at $3.50, or 75 cents less than shippers obtained a month ago. The contract market has been so inactive, that it is impossible to state upon what basis the bulk of second half fuel will be sold. The scrap market which was hit by a slump in the late fall has failed to develop strength and heavy melting steel this week is 25 cents a ton less than it was a week ago.

Pig Iron.—The pig iron market has been quiet, but prices are decidedly firm. It is understood that several blocks of standard basic sold this week at $16.50, valley. Despite the fact that a couple of interests are offering good tonnages, this grade appears to be established at $16.50, valley. Several weeks ago, a local consumer closed for 3,000 tons, paying $16.35, valley, for 1,000 tons and $16.50, valley, for the remaining tonnage.

Two of the large non-merchant furnaces in this district are out and it is understood that two stacks in the valley regions will go out for relining at an early date. Melters continue to urge shipments, and there is no present indication of any weakness. Quotations for first half delivery follow:

(First Half.)

Bessemer, valley	$17.25 to 17.50
Bessemer, Pittsburgh	18.15 to 18.40
Basic, valley	16.50
Basic, Pittsburgh	17.40
No. 2 foundry, valley	17.50
No. 2 foundry, Pittsburgh	18.40
Malleable, valley	17.25 to 17.50
Malleable, Pittsburgh	18.15 to 18.40
Gray forge, valley	16.25 to 16.50
Gray forge, Pittsburgh	17.15 to 17.40

Ferro-Alloys.—The market for prompt ferro-manganese shows indications of regaining strength. Carload lots have been sold at $70 for prompt delivery, and as advised a week ago, one sale was made at $75, seaboard, although sentiment in other quarters appears to be that this figure is out of the question. Several small sales of 50 per cent ferro-silicon have been made this week at $75, Pittsburgh.

We quote 80 per cent ferro-manganese at $65 to $75, Baltimore, for prompt delivery and $65 to $70 for forward shipment. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $75, Pittsburgh, for prompt and forward delivery; 12 to 13 per cent, $25 to $26, 11 to 12 per cent, $24 to $25; 10 to 11 per cent, $23 to $24; 9 to 10 per cent, $22 to $23, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

On ferro-titanium we quote 8 cents per pound for carload lots; 10 cents per pound for 2,000 pound lots and over, and 12½ cents per pound in lots up to 2,000 pounds.

Plates.—About 40,000 railway cars are involved in pending inquiries and some state that 60,000 cars are under negotiations. That of the Harriman lines, for 13,000 cars, is not yet distributed, as previously explained. The Pennsylvania railroad is asking bids on 12,300 cars, including 5,000 steel gondolas, 1,300 wooden side gondolas, and 1,000 refrigerator cars, for the lines east, and 3,000 hoppers and 1,000 gondolas; 500 box and 500 refrigerator cars for the lines west. The lines west also are in the market for 100 locomotives of various types, and closed for 65 locomotives about ten days ago. The Norfolk & Western is asking bids on 2,000 cars, and is considering the purchase of 2,000 or 3,000 additional cars at a future date. The Chesapeake & Ohio has asked bids on 3,000 cars; the Chicago, Milwaukee & St. Paul on 5,000, and the Atlantic Coast Line railroad on 2,000. Aside from these inquiries, there are a large number of scattering orders about to be placed. The Wheeling & Lake Erie railroad, as previously reported from New York, has ordered 1,500 cars, having placed 500 with the American Car & Foundry Co., and 1,000 with the Standard Steel Car Co. Car manufacturers, who already have unusually large orders on their books, will be unable to build all of the cars involved, until the latter part of the year. Steel plates continue to be quoted at a range from 1.45c to 1.60c, for forward delivery, although 1.50c represents the price at which the bulk of the tonnage has been sold. As high as 1.90c and 2c is being paid for prompt material. We quote:

Standard steel plates ¼ inch thick, 6¼ to 100 inches, 1.45c to 1.60c for forward shipment and 1.65c to 1.90c for prompt shipment. For extras, see card of Sept. 1, 1909.

Sheets.—Demand for sheets continues at an extremely heavy rate, unusually large tonnages have been sold for third quarter delivery, and it is understood that several manufacturers have been able to obtain material for shipment after Oct. 1. Advanced prices, which went into effect Jan. 13, have been firmly established and no tonnage for forward delivery has been sold at less than the prevailing market. Premium prices for prompt material are becoming more and more frequent.

It is only a matter of several weeks before prevailing quotations become more or less nominal as mills are rapidly selling all the material they are able to offer. Specifications appear to be to the full extent of contracts in almost every instance and as a general rule, consumers are asking additional tonnages. We quote the market as follows, for forward delivery:

Flat Sheets.

Black Sheets.—Nos. 10-12 gage, $2.00 per 100 pounds; Nos. 13-14 gage, $2.05; Nos. 15-16 gage, $2.10; Nos. 17-21 gage, $2.15; Nos. 22-24 gage, $2.20; Nos. 25-26 gage, $2.25; No. 27 gage, $2.30; No. 28 gage, $2.35; No. 29 gage, $2.40; No. 30 gage, $2.50.

Tin mill sizes, Nos. 15-16 gage, $2.10 per 100 pounds; Nos. 17-21 gage, $2.15; Nos. 22-24 gage, $2.20; Nos. 25-27 gage, $2.25; No. 28 gage, $2.30; Nos. 29-30 gage, $2.35; Nos. 30½-31 gage, $2.40; No. 32 gage, $2.45.

Blue Annealed.—Nos. 3-8, $1.70 per 100 pounds; Nos. 9-10, $1.75; Nos. 11-12, $1.80; Nos. 13-14, $1.85; Nos. 15-16, $1.95.

Galvanized.

Nos. 10-11 gage, $2.50 per 100 pounds; Nos. 12-14 gage, $2.60; Nos. 15-16 gage, $2.-

75; Nos. 17-21 gage, $2.90; Nos. 22-24 gage, $3.05; Nos. 25-26 gage, $3.20; No. 27 gage $3.35; No. 28 gage, $3.50; No. 29 gage. $3.65; No. 30 gage, $3.80.

Roofing Sheets

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c; 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with or without cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—Tin plate consumers continue to place good orders with the mills in this district, despite the fact that the buying movement was believed to have closed several weeks ago. A number of manufacturers seriously complain about the present base price of tin plate, claiming that the cost of raw material makes it impossible to roll material at a profit. There is no talk, however, of any immediate advances. Specifications for terne plates continue heavy. The prevailing market price follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.60, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Mills rolling rails in this district have taken a number of good orders this week. One of the gratifying features of the rail buying this year is that demand for Bessemer sections has been almost equal to that for open-hearth steel rails. Traction line companies are figuring more prominently in the market and there has been considerable buying for emergency purposes by leading railroads.

January tonnage of rails will equal, and perhaps exceed, that of December. Railroad spikes continue to be quoted at a range from 1.90c to 2c. Rails are quoted as follows, with the base price of open-hearth steel sections at 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.25c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, base, Pittsburgh; track bolts, 2.40c to 2.50c, base, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9-16	1.90c to 2.00c
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7-16	.20
3 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x 5-16	.60
2 x 5-16	.80

Billets and Sheet Bars.—Consumers in this district have scoured the entire country in a futile attempt to obtain semi-finished material. Although no sales have been made, prevailing quotations appear to represent actual conditions as accurately as possible. Consumers managed to cover first quarter needs at considerable less than quotations representing the market of today. We quote semi-finished steel products as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $28.50, with the usual extra for size and analysis, and open-hearth rolling billets, $29.00 to $29.50. Bessemer sheet and tin bars are quoted at $29.00 and open-hearth sheet bars are quoted $29.50 to $30.00, f. o. b. Pittsburgh and Youngstown, with full freight to destination added. Forging billets are quoted at $35.00 to $36.00, Pittsburgh.

Hoops and Bands.—New buying of hoops and bands has fallen off considerably, but specifying has continued heavy. The present price of hoops is entirely satisfactory to manufacturers, and as was explained a week ago, some mills are rolling hoops entirely. We quote the market as follows:

Hoops in carload lots, 1.60c to 1.70c, Pittsburgh, in less than carload lots, 1.65c to 1.75c; bands, 1.40c to 1.45c, base, with net extras, as per standard steel.

Merchant Bars.—The market for iron and steel bars is practically featureless. Consumers have covered first half needs and several mills have sold steel bars through the entire year. Warehouse stocks are almost entirely depleted and it will be some time before an opportunity is offered to build up stocks. Iron bars continue to be quoted at a range from 1.70c to 1.80c. Demand has not fallen off and specifying continues liberal. Shafting has been established at the new price and is quoted at 58 per cent off for carload lots and 53 per cent off for less than carload lots. We quote products as follows:

Common iron bars, 1.70c to 1.80c, Pittsburgh; Bessemer and open-hearth steel bars, 1.40c to 1.45c; plow and cultivator, 1.40c to 1.45c; channels, angles, zees, tees, under 3 inch, 1.50c to 1.55c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds and not less than 1,000 pounds of a size, 0.15 advance, less than 1,000 pounds of a size, 0.35. Cold rolled and ground shafting, 58 per cent off in carloads and 53 per cent in less than carloads delivered in base territory.

Nuts, Bolts and Rivets.—There is no change in the market for nuts, bolts and rivets. Demand continues heavy, and specifications have not fallen off. We quote as follows:

Rivets

Button head structural rivets, 2.20c, cone head boiler rivets, 2.30c. Small rivets 75, 10 and 10 off.

Bolt and Nut Discounts

Carriage bolts, ⅜ x 6 inches, smaller and shorter, rolled threads, 75 and 10; cut threads 75 and 5; larger and longer, 70 and 2½.

Machine bolts with hot pressed nuts, ⅜ x 4 inches, smaller and shorter, rolled 75, 10, and 5; cut, 75 and 10; larger and longer, 70 and 7½.

Gimlet and cone point lag or coach screws, 80 and 10.

Hot pressed square, blank or tapped nuts, $5.70 off list; hot pressed hexagon blank or tapped, $6.30.

Cold pressed C. & T. square, blank or tapped, $5.70 off; hexagon, blank or tapped, ⅝-inch and larger, $6.60 off; ½ inch and smaller, $7.20 off.

Structural Shapes.—An unusually large number of inquiries for structural material have come out in this district this year, and fabricators have been taking especially good contracts. The Pennsylvania railroad has not yet awarded the contract for the double-track bridge at Sheridan, Pa., involving 6,600 tons of steel, although it is probable that this job will go to the American Bridge Co. This interest has taken a contract for a new building to be erected by the Eastman Kodak Co., at Rochester, N. Y., involving about 300 tons.

The Pennsylvania Rubber Co. is asking bids on fabricated material for a new building at Jeannette, Pa. The W. G. Wilkins Co., Pittsburgh, architects, is in charge.

Bids on 22,000 tons of plain and fabricated material for the Cristobal-Balboa transmission line will be closed Jan. 31. If domestic manufacturers are unable to furnish material when desired, it is probable that at least a part of the order will be filled abroad. Shapes continue to be quoted at 1.45c to 1.60c, for forward delivery, and it is practically impossible to obtain prompt material in this district.

Standard structural shapes, 1.45c to 1.60c for forward shipment. For extras see card of Sept. 1, 1909.

Merchant Pipe.—Demand for iron and steel pipe continues heavy and rather large tonnages of oil country goods, including tubing, casing and line pipe, have been placed with manufacturers in this district. The Philadelphia company, which is in the market for about 8,500 tons of iron line pipe, has not yet closed negotiations and an inquiry for 180 miles of 12-inch line pipe is still pending. One of the local independent mills has taken a contract for one mile of 10-inch pipe for southwestern shipment and an inquiry for 2½ miles of 6-inch pipe for similar shipment is pending. We quote iron and steel pipe discounts, which are subject to the usual preferential discount to the large buyer, as follows:

Iron and Steel Pipe Basing Prices.

STEEL.

	Black. Butt.	Galv. Butt.	Black. Lap.	Galv. Lap.
⅛, ¼ and ⅜ inch.	73	52½	..	..
½ inch	77	66½	..	..
¾ to 3 inch	80	71½	..	..
2 inch	..	..	77	68½
2½ to 6 inch	..	..	79	70½
7 to 12 inch	..	..	76	65½
13 to 15 inch	..	..	53	....

Extra Strong Plain Ends			Card	Weight.
⅛, ¼ and ⅜ inch	68	57½	..	..
½ inch	73	66½	..	..
¾ to 1½ inch	77	70½	..	..
2 to 3 inch	78	71½	..	..
2 inch	..	..	74	65½
2½ to 4 inch	..	..	76	67½
4½ to 6 inch	..	..	75	66½
7 to 8 inch	..	..	68	57½
9 to 12 inch	..	..	63	52½

Double Extra Strong Plain Ends, Card Weight.

½ inch	63	56½	..	..
¾ to 1½ inch	66	59½	..	..
2 to 2½ inch	68	61½	..	..
2 inch	..	..	64	57½
2½ to 4 inch	..	..	66	59½
4½ to 6 inch	..	..	65	58½
7 to 8 inch	..	..	58	47½

IRON.

⅜ inch	66	47	..	..
½ inch	70	57	..	..
¾ to 2½ inch	73	62	..	..
2 inch	..	..	69	59
2½ to 6 inch	..	..	71	62
7 to 12 inch	..	..	69	56

Extra Strong Plain Ends, Card Weight.

⅜ inch	64	53	..	..
½ inch	68	61	..	..
¾ to 1½ inch	72	63	..	..
2 and 2½ inch	73	64	..	..
2 inch	..	..	67	59
2½ to 4 inch	..	..	71	62
4½ to 6 inch	..	..	70	61
7 to 8 inch	..	..	64	54
9 to 12 inch	..	..	59	48

Double Extra Strong Plain Ends, Card Weight.

½ inch	58	50	..	..
¾ to 1½ inch	61	53	..	..
2 and 2½ inch	63	55	..	..
2 inch	..	..	56	50
2½ to 4 inch	..	..	61	55
4½ to 6 inch	..	..	60	54
7 and 8 inch	..	..	53	43

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—Specifications against contracts continue heavy and mills are taking rather heavy tonnages on new orders. There has been no change in the price of either iron or steel boiler tubes since the first of the year, when both jobbers and makers offered new discounts to the trade. Discounts to jobbers follow:

IRON AND STEEL BOILER TUBES BASING PRICES

(To Jobbers.)

	Steel.	Iron.
1¾ and 2 inch	61	48
2¼ inch	58	44
2½ and 2¾ inch	64	53
3 and 3¼ inch	69	55
3½ to 4½ inch	71	58
5 and 6 inch	64	..
7 to 13 inch	61	..

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire.—There has been some new buying of wire nails and manufacturing interests have been covering plain wire requirements the past week or 10 days. Manufacturers advise that $1.55 and $1.75 quotations for plain and nails, respectively, have been established. Heavy shipments continue to be made to all parts of the country. Cut nails remain unchanged in price. We quote:

Wire nails, jobbers' carload lots, $1.75, retailers' carload lots, $1.80; cut nails (western makers), jobbers' lots, $1.70; painted barb wire, jobbers' carload lots, $1.75; retailers' carload lots, $1.80, with 40c for galvanizing; plain wire to jobbers in carloads, $1.55; and to dealers, in carloads, $1.60; polished staples, $1.75; galvanized staples, $2.10.

Wire Rods.—A consumer of wire rods advised that he is unable to obtain either Bessemer or open-hearth rods at less than $30, Pittsburgh. No sales have been reported for several weeks and we offer the $30 figure as a nominal quotation.

Coke. — The coke market experienced a decided decline in prices last Saturday afternoon, when several consumers closed contracts for fairly large tonnages of standard 48-hour fuel at $3.50, ovens, for prompt delivery, and this figure now accurately represents the market for this grade. Several large operators have offered to contract for first half at $3. A sale of 1,000 tons at $3.65, ovens, for prompt delivery was made just before the close of last week, but this figure has been out of the question the last few days. Coke is selling at less than it has brought for three months, the $3.50 quotation having disappeared the latter part of October. Although conditions appear weak, an analysis indicates that the present market is weak only when compared with conditions existing the last three months. During the first nine months of 1912, $3.50 fuel appeared to be more of a myth than a reality. The low prices of today are due to several reasons, including the heavy production, the excellent shipments against contracts and the lack of demand. In addition to these reasons, several shippers, who held coke expecting to see it go above $4, are now offering fuel in an effort to market it before a further decline is experienced.

Spot foundry fuel has been selling at between $4.25 and $4.35, ovens. The contract market has been quiet and in the absence of sales, we make no change in quotations which are really only nominal. The Connellsville *Courier* for the week ending Jan. 18 says production was 429,828 tons, an increase of 25,431 tons over the week before. All previous records for 1912, when the 400,000-ton mark was passed less than a dozen times, were broken. Shipments increased 728 cars. Revised quotations follow:

Connellsville furnace	$3.50
Connellsville furnace contract	3.25
Connellsville foundry	4.25 to 4.35
Connellsville foundry contract	4.00

Old Material.—The slump that hit the iron and steel scrap market in the late fall continues to be noticeable. Heavy melting steel in the last six or seven weeks has dropped from $15.50 to $14.75, and we now quote this stock at a range from $14.75 to $15. Quotations are reduced in recognition of several purchases made the last few days by some of the leading consumers in this district. The existing weakness of the scrap market is the result of heavy tonnages offered by middlemen in the fall, which enabled consumers to build up large stocks, resulting in a noticeable absence of demand. Rerolling rails continue to hover around $14 and machine shop turnings, which have been fluctuating for several weeks, are now quoted at a range from $10 to $10.50. Cast borings and No. 1 cast scrap stand up in spite of the slump that has greatly affected other grades. Revised quotations for delivery in the Pittsburgh district are:

Heavy melting scrap	$14.75 to 15.00
Rerolling rails	16.50 to 17.00
Malleable	14.00 to 14.50
Agricultural malleable	13.50 to 13.75
Bundled sheet scrap	13.00 to 13.25
Iron axles	26.00 to 26.50
Old iron rails	16.50 to 17.00
Stove plate	11.00 to 11.50
No. 1 wrought scrap	15.25 to 15.50
Old car wheels	16.25 to 16.50
Low phosphorus	18.00 to 18.25
Machine shop turnings	10.00 to 10.50
No. 1 busheling	14.00 to 14.50
Country mixed	11.00 to 11.25
Cast borings	10.25 to 10.50
No. 1 cast scrap	14.75 to 15.00

WALK OUT

Number of Employes at Rankin, Pa., on Strike.

About 10 per cent of the men employed at the Rankin, Pa., plant of the American Steel & Wire Co., struck last Saturday, and several hundred men were thrown out of work. The rod mill is the only department operating full, and the strike zone has spread to the company's plant at Braddock, where a number of employes in the rod mill quit work Monday, in sympathy with fellow workers. Nearly all of the strikers are foreigners, who asked to be paid by the day, instead of by tonnage.

The first night of the strike was featured by a maudlin scene in Rankin, where pistol shots were heard frequently. A half dozen men were injured. The Rankin plant pays as good wages as any mill in the district. In back of the strike is seen a move on the part of the American Federation of Labor to unionize employes in steel plants throughout the country. Thus far, such attempts have not been successful in the Pittsburgh district.

It is believed that employes will accept offers made by the company and will return to work this week. Had the men walked out a month or so ago, concessions probably would have been made. Just at present, an industry as flexible as the American Steel & Wire Co. can afford to have mills idle for a short time. Newspapet accounts to the effect that deputy sheriffs were stabbed in the riot Monday are untrue.

One man was killed and 15 or 16 were injured in a riot, Tuesday, that marked the fourth day of the strike Lieut. Wiechard, of the state police force, with a squad of his men may be summoned to patrol the strike zone and maintain peace.

CHICAGO

New Business Slackens---Specifications Heavy

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., Jan. 28.

Although there is an apparent slackening of new business in finished lines, it is due principally to the fact that the little tonnage that the mills have remaining cannot be obtained on a basis that is always satisfactory to buyers. Specifications against contracts for all products, with the exception of bar iron, appear to be increasing and the total for January promises to exceed that received in December. A larger number of inquiries were received by some of the mills in this territory during the past week than in any other week in the past year. While western independents are still fighting off second half tonnage, some contracts continue to be forced upon them. One of the eastern independents, selling in this market, has booked definite sales calling for delivery in November and December.

Pig Iron. — There appears to be more activity in this market in some quarters, which is largely reflected in inquiries for second half delivery. These, however, most frequently call for northern specifications. With the exception of those who are able to quote low prices, southern sellers report a dearth of business. The low quotations in the market seem to be made entirely by Tennessee furnaces which are willing to accept $13.50, Birmingham, for any delivery during the year. The larger Birmingham furnaces are firmly maintaining their position, one quoting $14, Birmingham, for February delivery, and $14.50, for the remainder of the first half. This interest refuses to quote on second half business. Another southern seller is maintaining quotations at $14.50, Birmingham, for any delivery during the year.

Large sales of northern iron have been made recently, including a good tonnage taken by Fairbanks, Morse & Co. Both buyers and sellers refuse to discuss the price involved in the latter transaction. A consumer in Three Rivers, Mich., has taken about 1,000 tons of northern foundry and 350 tons of 3 to 4 per cent Jackson county silicon. It is thought that the former lot went to Detroit or Toledo sellers. An inquiry from a Milwaukee foundry is reported involving about 350 tons of low phosphorus iron and other inquiries for good tonnages are reported from the same neighborhood. Although some of the larger consumers in this territory are following a conservative policy regarding their second half requirements, more inquiry for that delivery is apparent. It is thought by some, however, that a large part of it is tentative.

The following prices represent the market for Chicago delivery, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnaces:

	First half.
Lake Superior charcoal.....	$18.00 to 19.25
Northern foundry No. 2.....	18.00
Southern foundry No. 2.....	17.85 to 18.85
South'n Silveries, 5 per cent sil.	19.85
Jackson co. silv'r's 8 per cent..	21.90 to 22.40
Malleable Bessemer	18.00
Alabama basic	18.85

Merchant Bars.—There continues to be good inquiry for soft steel bars, which some of the mills in this territory are unable to take care of. The situation in bar iron is relieved somewhat by a falling off in both specifications and new business. This condition is very welcome to producers, as bar mills are congested and deliveries are being postponed six months in many cases. Prices on iron bars are firm at from 1.60c to 1.62½c.

We quote f. o. b Chicago as follows:

Bar iron 1.60c to 1.62½c; hard steel bars, rerolled, 1.65c to 1.75c, soft steel bars, bands and small shapes, 1.63c; hoops, 1.63c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 60 per cent off list for carload lots, 55 per cent off for less than carloads.

On iron and steel from local stock we quote as follows:

Bar iron, 1.95c per pound base; soft steel bars, 1.95c per pound base; soft steel hoops, 2.30c, full extras.

Structural Material.—Although a fair number of structural contracts were placed during the past week, their individual totals are small, the aggregate being only 2,132 tons. Of this the leading interest has taken 300 tons for the First National Bank building, Great Falls, Mont., 306 tons from the Chicago & Northwestern Ry. Co., for signal bridges and 350 tons from the Santa Fe for structural steel for the Union station at Galveston, Tex. The Hansell-Elcock Co. has taken 153 tons for the state hospital at Dunning, Ill., and 510 tons from the Chicago Bearing Metal Co., for a brass foundry in Chicago. The Worden-Allen Co. has taken 393 tons from the Calumet & Hecla Mining Co. for an electrolytic plant at Hubbell, Mich., and J. J. Burke & Sons have taken 273 tons from the Salt Lake & Ogden Ry. Co. for deck plate girder spans. The Atchison, Topeka & Santa Fe has ordered 250 tons of structural steel from the American Bridge Co.

Although considerable business is continuously offered in structural material, the mills remain unable to take it on account of their exceedingly congested condition. Fabricators in this territory are obtaining good prices, but are having trouble in some instances on account of labor difficulties.

We quote f. o. b. Chicago as follows:

Beams and channels, 15 inch and under, 1.68c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles over 6 inches, $2.15 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $2.05 per 100 pounds, base; channels, 3 inches and larger, $2.05 per 100 pounds, base.

Rails and Track Fastenings.—Western roads are still offering heavy tonnages of both rails and track fastenings, but the mills in this territory have been forced to refuse many of them. Considerable new rail inquiry has appeared calling for 1913 delivery and the latter stipulation has been the cause of the difficulty in placing orders. The movement of track fastenings is very heavy and, owing to the congestion maintaining in the leading interests' mills, independent producers are experiencing a gratifying run of business.

We quote light rails f. o. b. Chicago, as follows:

Light rails, carloads, 25 to 45-pound, 1.30c; 16 to 20-pound, 1.35c; 12-pound, 1.40c; 8-pound, 1.50c.

Light section relayers, 45 pounds and un-

der, subject to inspection, $22 to $24; standard section relaying rails, subject to inspection.

Track fastenings f. o. b. Joliet, as follows:

Angle bars 1.50c; railroad spikes, 1.95c; smaller size spikes, 1.75c base; track bolts with square nuts, 2.30c to 2.40c.

Plates.—As the bookings taken by the mills of the leading interests approach nearer their capacity, independent producers in the west are being forced to rescind in a greater number of cases their policy against taking second half business. Notwithstanding the fact that the business already on the books of car builders will in many cases exhaust their 1913 capacity, many new orders have been placed and additional inquiries are in the market. Plate requirements in other quarters are also heavy, as reflected in the specifications received during the week. The Northern Pacific is in the market for six postal cars and the New York, Chicago & St. Louis is in the market for four all-steel passenger coaches. The Louisville & Nashville is said to be in the market for 500 gondola cars. This item has not been confirmed. The Chicago, Indianapolis & Louisville has ordered 2,000 freight cars from the Haskell & Barker Car Co.

We quote f. o. b., Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 100 inches wide, 1.68c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $2.05.

Bolts, Nuts and Rivets.—Although a slight seasonal depression continues to be felt in the market for these materials, business continues to be very satisfactory. While deliveries can still be had in from four to six weeks, any material increase in the present demand would advance this period considerably. Prices are very firm.

We quote prices on bolts, nuts and rivets as follows:

Rivets

Structural rivets, ¾ to 1¼ inches, 2.38c, base, Chicago, in carload lots; boiler rivets, 0.10c additional.

Bolt and Nut Discounts

Carriage bolts up to ⅜ x 6 inches, rolled thread, 75-10; larger sizes, 70-2½.

Machine bolts, up to ⅜ x 4 inches, rolled thread, 75-10-5; cut thread 75-10; larger sizes, 70-7½.

Hot pressed nuts, square head, $5.70 off per cwt.; hexagon, $6.30 off per cwt.

Sheets.—As was anticipated, western producers are having no difficulty in maintaining their full prices, the recent advance by the leading interest having removed all reason for shading. Western mill quotations are now on a basis of $3.50, Pittsburgh, for galvanized, this being in line with Pittsburgh prices. Store prices have stiffened considerably.

We quote f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.25c; No. 12, 2.20c. Box annealed, No. 28, 2.90c. Galvanized No. 28, 4.15c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—Although there is a very satisfactory demand for wire products, deliveries can be had in a short time, as the leading interest has avoided a sold-up condition on this material. This is the only mill product at present on which mills are not badly congested. Business continues to increase and is well distributed, and while there is no immediate prospect of higher quotations, advances may be expected during the first half.

We quote f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.93; retailers' carload lots, $1.98; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.93; retailers' carload lots, $1.98; retailers' less than carload lots, $2.03, with 40c for galvanizing; plain wire, jobbers' carload lots, $1.73; retailers' carload lots, $1.78.

Merchant Pipe and Tubes.—There is no material change in the market conditions for this material. The seasonal dullness is felt to some extent, which is very welcome to western makers. Material changes have been made in the store prices of steel boiler tubes, the list prices of several sizes having been changed. These changes are shown in the accompanying table.

We quote store prices f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	69.2	48.2	62.2	42.2
⅜ inch	73.2	62.2	66.2	....
½ inch to 1½ inch.	76.2	67.2	69.2	57.2
Lap.				
2 inch	73.2	64.2	65.2	54.2
4½ inch to 6 inch..	75.2	66.2	67.2	57.2
Card Weight.				
7 inch to 12 inch...	72.2	61.2	65.2	54.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	64.2	52.2	58.2	46.2
½ inch	69.2	57.2	63.2	51.2
2 inch to 3 inch....	74.2	62.2	....	....
Lap.				
2 inch	70.2	58.2	64.2	52.2
7 inch to 8 inch....	64.2	52.2	58.2	46.2
Double Extra Strong.				
Butt.				
½ inch	57.2	45.2	....	....
¾ inch to 1½ inch	60.2	48.2	....	....
Lap.				
2 inch	58.2	48.2	....	....
4½ inch to 6 inch..	59.2	47.2	....	....
7 inch to 8 inch....	52.2	40.2	....	....

Tubes

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	..	..	57½
1¼ to 2 inch	51	40	35
2¼ inch	51	36	35
2½ to 2¾ inch	56	43¾	40
3 to 3¼ inch	61	47	46
3½ to 4½ inch	63	50	46
5 to 6 inch	56	..	..

Cast Iron Pipe.—Lettings will be made during the week on 1,000 tons of water pipe required by Yankton, South Dakota. While considerable good business is pending, the larger municipalities have not as yet asked for bids on definite tonnages. Prices are firm at current quotations.

We quote f. o. b. Chicago, as follows:

Four-inch water pipe, $31, 6 to 12 inches, $29, larger sizes, $28, gas pipe, $1 a ton higher.

Old Material.—The scrap market continues to be very weak and this condition is made worse by the continued appearance of railroad lists. As consumers' stocks remain very large, dealers are still forced to take the greater part of the railroad offerings in order to sustain the market. The Rock Island has invited bids on 1,320 tons of miscellaneous scrap, of which the largest items are 800 tons of No. 1 steel rails and 400 tons of No. 1 railroad wrought. The C., B. & Q. has invited bids on 3,125 tons of scrap and the Southern railway has issued a list embodying 2,725 tons. The Chicago Great Western has also sent out a small list. The appearance of good tonnages of rails is welcome to consumers in this territory as the scarcity in re-rollers has kept mills running on single shift for some time.

We quote for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$17.00 to 17.50
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	16.00 to 16.50
Old steel rails (3 ft. and und.)	14.50 to 15.00
Frogs, switches and guards	12.75 to 13.25
Heavy melting steel	12.50 to 13.00
Shoveling steel	12.25 to 12.75

Net Tons

No. 1 R. R. wrought	$12.25 to 12.75
No. 2 R. R. wrought	11.75 to 12.25
Arch bars and transoms	16.50 to 17.00
Knuckles, couplers and springs	12.75 to 13.25
Shafting	16.50 to 17.00
Iron car axles	21.50 to 22.00
Steel car axles	18.25 to 18.75
Locomotive tires	13.50 to 14.40
Dealers' forge	10.75 to 11.25
Pipe and flues	9.25 to 9.75
No. 1 cast	13.50 to 14.00
No. 1 busheling	10.75 to 11.25
No. 2 busheling	8.00 to 8.50
No. 1 boiler cut	9.25 to 9.75
Boiler punchings	13.00 to 13.50
Cast and mixed boring	7.00 to 7.50
Machine shop turnings	8.00 to 8.50
Railroad malleable	13.50 to 14.00
Agricultural malleable	12.25 to 12.75
Angle bars, splices, etc., iron	16.50 to 17.00
Angle bars steel	12.00 to 12.50
Stove plate and light cast scrap	11.00 to 11.50

CLEVELAND

Competition of Southern Pig Iron Felt

Office of THE IRON TRADE REVIEW,
Penton Bldg., Jan. 28.

Iron Ore.—Vessel capacity to move about 300,000 tons of ore was contracted for during the past week. Still more ore was on the market, but was not taken by vessel owners, some of whom are very conservative about making contracts at the present time.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.40; Mesabi Bessemer, $4.15; old range non-Bessemer, $3.60; Mesabi non-Bessemer, $3.40.

Pig Iron.—The pig iron market in the immediate Cleveland district is very dull, but foundries are busy and there is no indication of weakness. On an inquiry for 300 tons by an Akron melter, $13.50, Birmingham, was named by a Tennessee furnace on No. 2 foundry, making the price about 40 cents lower than No. 2 northern, and it is understood that the buyer accepted the southern offer. The weakness of southern iron is having a sentimental effect on the northern situation. Northern prices are being firmly adhered to. For delivery during the first half of this year, we quote as follows, delivered Cleveland:

No. 1 foundry	$18.25
No. 2 foundry	17.75
No. 2 southern	17.85
Bessemer	18.15
Lake Superior charcoal	19.10
Silveries 8 per cent silicon	21.55
Bessemer ferro, 14 per cent	29.55

Coke.—The market for spot furnace coke is weaker, but prices do not yet meet the views of a local furnace which has been in the market for sometime for its first half requirements. Prices on foundry coke are also somewhat lower.

Connellsville furnace coke, $3.50 for prompt delivery, and $3.25 on contract; Connellsville foundry coke, $4.25 for prompt, and $4.00 on contract.

Finished Material.—New business continues rather light. Some mills report there is also a decrease in specifications, while others state that specifications are fully up to the rate of recent weeks. Some consumers report that they are receiving deliveries on finished materials more promptly than at any time for a number of months. The Carnegie Steel Co., has taken an order for 4,000 Shoen steel wheels for 400 of the 50-ton gondolas ordered last week by the Wheeling & Lake Erie railroad. It is understood that the wheels for the remaining 1,100 cars will be of cast iron. The Wheeling & Lake Erie will soon erect a number of bridges and is in the market for structural material. This road has purchased two Hulett 17½-ton ore unloaders to be installed at Huron. The American Steel & Wire Co., is in the market for 25 gondolas for its Cleveland railroad. A moderate tonnage of forging billets has been sold at $35, Cleveland. The strength of the bar market is shown by the fact that sellers of bars suitable for forging are charging, and have no difficulty in getting, from $1 to $2 more on extras than have been charged until very recently. Cleveland jobbers have not revised their charges for extras for cutting materials, as the charges in Cleveland are already higher than those in Chicago, which recently have been advanced. The sheet market is firm, but it is not expected that prices will advance. Some mills are declining to contract for third quarter on the ground that this is a bad precedent to set, even when advances in prices are not expected.

H. Harrig & Co., Cincinnati, have taken general contract for Reibold building, Dayton, 11 stories, 1,600 tons.

Old Material.—Shipments on machine shop turnings have been stopped by all consumers in this district, who are over-supplied. As a result, the market is very weak on this grade, which has dropped to $7 to $7.50. More scrap turnings are being produced than ever before, and this is a factor in the situation. The market generally continues quiet, with a not very cheerful outlook. Quotations follow:

Gross Tons.

Old iron rails	$17.75 to 18.50
Old steel rails (under 6 ft.)	15.00 to 15.50
Old steel rails (over 6 ft.)	16.25 to 16.75
Relaying rails	25.00 to 26.00
Old steel boiler plate	11.50 to 12.00
Malleable iron (railroad)	14.50 to 15.00
Steel axles	19.50 to 20.00
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	13.00 to 13.50
Heavy steel	13.00 to 13.25
Country mixed steel	11.00 to 11.50
Bundled sheet scrap	11.00 to 11.50

Net Tons.

No. 1 R. R. wrought	$13.75 to 14.00
No. 1 busheling	12.00 to 12.50
No. 1 machine cast	12.50 to 13.00
No. 1 dealers' wrought	11.50 to 12.00
Machine shop turnings	7.00 to 7.50
Pipes and flues	9.50 to 10.00
Wrought drillings	7.75 to 8.00
Cast borings	7.50 to 7.75
Stove plate	10.00 to 10.50
Wrought iron arch bars	17.00 to 17.50
Wrought iron piling plate	16.00 to 16.50

MEN ESCAPED

By Running When Warning of Danger at Furnace Was Given.

Supt. Willard Fuller, of the blast furnace of the Upson Nut Co., Cleveland, has long impressed upon the employes of the plant the importance of running at the instant warning is given. Tuesday afternoon, at 2 o'clock, when the couplings on a train of ladles carrying hot metal from the furnace to the open-hearth plant broke, whistles sounded the alarm. All employes ran for their lives and a few seconds later 20 tons of molten metal poured upon the wet ground, causing a terrific explosion which shook a large part of the city of Cleveland. Supt. Fuller was hurled across his office, but escaped with hardly a scratch. Five or six men were hit by debris, but no one was seriously injured.

The damage to the plant, principally to the roof of the casting house, is estimated at $2,000. Some damage was caused to surrounding buildings. The blast furnace resumed Wednesday morning. The iron was so widely scattered by the explosion that practically none of it was found in the vicinity of the furnace.

Republic Changes.—W. T. Graham, formerly president of the American Can Co., Harry L. Rownd, vice president and treasurer of the Republic Iron & Steel Co., and Howard M. Hanna Jr., with M. A. Hanna & Co., have been made directors of the Republic Iron & Steel Co., succeeding Charles G. Gates, Oakleigh Thorne and John F. Harris. Mr. Graham becomes a member of the executive committee.

The board of supervisors, Fond du Lac county, Wisconsin, has authorized the expenditure of $9,000 for two complete road building outfits and a stone crusher.

CINCINNATI

Increasing Tonnage of Pig at Low Prices

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., Jan. 28.

Pig Iron.—The much looked for buying movement has not come, and some dealers are now expressing themselves that they do not expect much of a change before the latter part of the second quarter, or the last half. A little better inquiry is reported in several cases, but usually in small lots, and these are sometimes put out more for the purpose of feeling the market than for actual buying. The coke situation, especially in southern Ohio, is much relieved, as the recent blowing out of two furnaces in the Ironton district for re-lining has reduced the demand from that district to such an extent that the ovens are able to supply the remaining stacks in blast with about all the coke they need.

Prices in the south show no signs of regaining the level they held at the first of the year. In fact, it is now known that one Alabama furnace is offering No. 2 foundry iron at $13.50, Birmingham, for the first half, and some resale iron is also available in that state at $13, Birmingham, for prompt shipment. Some of the furnaces in that state are still holding at $14.50, Birmingham, for the first half, but plenty of iron can be had at $14 for any delivery up to the third quarter, or perhaps a little beyond that. The general resale price in Alabama is $13.50, Birmingham, for the first half. In Tennessee, the prevailing prices are $13.50 to $14, Birmingham basis, for furnace No. 2 foundry iron for the first half, and it is also probable that a little resale iron could be had in this state at $13, Birmingham basis, although only a limited amount.

In southern Ohio, production has been recently decreased by the blowing out of two of the larger furnaces, but there appears to be plenty of iron to be had from this section at $16.50 to $17, Ironton, for the first half, which prices include both furnace and resale grades. Bessemer ferro-silicon iron has been in fair demand, and has recently been advanced in price to $25 per ton, furnace, for 10 per cent silicon, and to $27 per ton, furnace, for 12 per cent silicon. There is also a good demand for ferro-manganese, but it is very scarce, and cannot be had in many cases.

Inquiries of a general nature are very scarce. There is one in the market that calls for 1,000 tons of northern iron to be delivered over the next 10 months, from a Pittsburgh concern for shipment to its northern Illinois plant. An inquiry from northern Ohio for 2,000 to 3,000 tons of malleable iron is still pending. With freight rates $3.25 from Birmingham and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 1	$17.25 to 17.75
Southern foundry No. 2	16.75 to 17.25
Southern foundry No. 3	16.25 to 16.75
Southern foundry No. 4	16.00 to 16.50
Southern gray forge	15.75 to 16.25
Mottled	15.75 to 16.00
Southern No. 1 soft	17.25 to 17.75
Southern No. 2 soft	16.75 to 17.25
Standard southern car wheel	27.25 to 27.75
Northern No. 2	17.70 to 18.20
Northern No. 3	17.20 to 17.70
Northern No. 4	16.95 to 17.45
Silveries 8 per cent silicon	20.70 to 21.20

Coke.—The coke market is a little weaker and lower prices for both furnace and foundry grades are being generally quoted in all the fields. The reason generally given here is that the continued good weather has enabled the ovens to secure more labor and consequently a larger production has resulted. The demand has also fallen off a little, and in several cases, in which furnaces have blown out for relining, the ovens have been asked to suspend shipments until further notified. The situation in the Hanging Rock district especially has become easier.

We quote actual selling prices for spot and contract coke, as follows:

Connellsville district:	Prompt shipment.	Contract.
Foundry coke	$3.75 to 4.00	$3.50 to 3.85
Furnace coke	3.25 to 3.65	3.00 to 3.25
Wise county district:		
Foundry coke	$3.50 to 3.75	$3.25 to 3.50
Furnace coke	3.15 to 3.50	3.00 to 3.25
Pocahontas district:		
Foundry coke	$3.25 to 3.50	$2.75 to 3.25
Furnace coke	2.75 to 3.25	2.50 to 2.75
New River:		
Foundry coke	$3.25 to 3.75	$2.75 to 3.25
Furnace coke	2.75 to 3.25	2.50 to 2.75

Finished Material.—The local situation continues strong. Inquiries are good, but a number of mills are showing an independent spirit in some cases as to whether or not they place much more business at the present time. The local mill is receiving specifications faster than its output can supply, and it is holding firmly at 2.35c for black sheets No. 28 gage, and 3.50c for galvanized sheets No. 28, Pittsburgh basis, and in some instances has submitted even higher quotations.

We quote, warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 2c to 2.10c base; iron bars, 1.95c to 2.05c base; structurals, 2.10c to 2.20c base; plates, ¼ inch and over, 2.10c to 2.20c base; sheets, blue annealed, No. 10, 2.25c to 2.35c base; rivets, cone head, 2.60c to 2.70c base; cold rolled shafting, 58 to 55 per cent off on round, and 55 to 50 per cent discount on flat, square and hexagon; steel hoops, 2.10c to 2.20c base; full extras; boiler tubes as follows: 1½ inch, 46 per cent discount; 1¾ to 2¼ inch, 57 per cent discount; 2½ inch, 60 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 68 per cent discount; 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ⅜ inch square and larger, 2.15c to 2.25c; ½ inch square and larger, 2.25c to 2.35c; ⅝ inch square and larger, 2.35c to 2.45c; 5-16 to ⅜ inch square and larger, 2.55c to 2.65c; and ¼ inch square and larger, 2.65c to 2.75c.

Old Material.—The scrap iron market remains weak and prices in some cases have declined 25 cents a ton. They have, however, held fairly well in spite of the adverse conditions. There is only a small demand for practically all grades of scrap, which is a condition that has existed here since the first of the year. A great many of the dealers and users appear to have lost track of the market, and some of the prices submitted for certain transactions are considerably different from those generally quoted. There is also a spirit of uncertainty that always prevails during a declining market and is shown by the fact that buyers who wish to cover for a short time ahead are offering prices that are as low proportionately for that time as they are at present in comparison with the decline that has taken place within the last three weeks. We quote below prices dealers will pay and also dealers' selling prices in Cincinnati and vicinity as follows:

Gross Tons

Old iron rails	$13.50 to 14.00
Old steel re-rolling	11.75 to 12.25
Old iron axles	18.00 to 18.50
Heavy melting scrap	11.75 to 12.25
Relaying rails	21.00 to 21.50
Bundled sheet scrap	8.75 to 9.25

Net Tons

Old No. 1 R. R. wrought	$11.00 to 11.50
No. 1 yard wrought	9.50 to 10.00
No. 1 machine cast	11.25 to 11.75
No. 1 busheling	9.25 to 9.75
Stove plate	8.00 to 8.50
Machine shop turnings	7.25 to 7.75
Cast borings	7.50 to 8.00
Heavy turnings	7.75 to 8.25
Mixed cast	9.75 to 10.25
Breakage	7.50 to 8.00
Malleable	9.25 to 9.75

PHILADELPHIA

Decrease in New Buying---Pig Prices Shaded

Office of THE IRON TRADE REVIEW,
Philadelphia, Jan. 28.

New buying in the eastern iron and steel market is now more generally quieter, though still of good extent in some lines of finished products. This development is scarcely surprising following the steady activity up until recently, which has put both mills and furnaces under heavy pressure to accommodate all buyers. Prices in finished products among eastern makers manifest no weakness and are very strong. The dullness in new pig iron demand is leading to the appearance of more shading of schedules, but little genuine weakness has appeared and the market is really not sufficiently active to show its true stability. Old material is still slumping under a light buying movement.

Pig Iron.—Voluntary interest in the market by consumers is at a minimum and prices are developing more softness as the present lack of activity continues. While none of the active merchant furnaces in eastern Pennsylvania seem under great necessity to push the market for orders, owing to their substantial bookings, there is, nevertheless, some disposition shown to shade former schedules on the larger inquiries where competition is encountered. This attitude has resulted in the appearance of quotations in some cases of $17, furnace, for No. 2X by a Lehigh valley maker and by a producer in the Lebanon district. The instances cited usually have been for delivery outside this immediate district and the tonnages involved have been attractive. Such furnace prices are equivalent to $17.75 to $17.85, delivered this district. Lehigh and Schuylkill valley makers of standard brands of iron, generally, hold around their former level of $17.75, furnace, for No. 2X, or $18.50, Philadelphia, and no genuine weakness has appeared here. Business, in fact, is being steadily taken in a small way from regular consumers at the full schedule; where shading has been noted, it has been on the more openly competitive lots of size. The market at present contains so few orders of this character that the extent of this easiness is doubtful and it is a question whether renewed buying of any extent would not tighten the market again. Virginia iron also continues to show some easiness, though this is usually from resale iron. In northern forge, a lot of several hundred tons was taken at $17.65, eastern Pennsylvania, and 500 tons of northern pipe iron was sold at $17.25, delivered in the Delaware river district. An eastern iron mill continues to inquire tentatively for 1,500 to 2,000 tons of standard forge, and some smaller lots are pending. One buyer of basic is open to offers on several thousand tons for second quarter, but makers' views are wide apart. This grade remains untested. A local buyer inquiring for 1,000 tons of early malleable has closed against this order at about $20, delivered. A Lebanon maker of low phosphorus iron has made sales of about 2,000 tons for first half at $21, furnace. Standard iron is firm at $24.50, Philadelphia.

We quote for prompt and first quarter shipment delivered to consumers' plants, in Philadelphia and vicinity as follows:

Eastern Pa. No. 1X foundry	$18.50 to 18.75
Eastern Pa. No. 2X foundry	18.25 to 18.50
Eastern Pa. No. 2 plain	18.00 to 18.25
Standard forge (Eastern Pa.)	17.50 to 17.75
Basic (Eastern and Central Pa.)	18.00
Virginia No. 2X	18.55 to 18.80
Southern No. 2	17.50 to 18.00
Malleable	19.50 to 20.00
Standard low phos. Phila.	24.50

Iron and Steels Bars.—Eastern bar iron makers are still able to book a liberal tonnage on contract at a minimum of 1.60c, mill, or 1.67½c, Philadelphia, but for early shipment they are obtaining up to 1.80c, mill. Some steel bar makers report a little betterment in deliveries on specifications, but this is not general and shipments run five to six months. Some contracting for third and fourth quarter continues to be done at 1.40c, Pittsburgh. The C. & O. railroad is still inquiring for 2,000 tons of bars for second quarter and is finding it difficult to obtain the deliveries asked.

We quote for delivery to consumers' plants in Philadelphia and vicinity: Steel bars at 1.55c to 1.60c on contract and common bar iron at 1.67½c to 1.77½c. Prompt steel bars on mill shipments are quoted at 1.85c to 1.95c delivered and from store are quoted at 2c to 2.15c, delivered. Cut nails are quoted from $1.85 to $1.90, Philadelphia. Shafting is quoted at 58 and 53 off in base territory.

Plates.—Deliveries with eastern plate makers have improved somewhat, but still run from four to six weeks on tonnages with some premium lots going in 10 days. New business is not quite so brisk, but is still good. Prices remain firm at 1.60c to 1.65c, Pittsburgh, or 1.75c to 1.80c, Philadelphia, applying through the second quarter. Pittsburgh mills are quoting 1.45c to 1.50c on contracts for third quarter and in some cases beyond. One independent mill not in the Pittsburgh district, has been booking a number of contracts for third quarter in southeastern districts at 1.45c, Pittsburgh. Considerable boat tonnage remains under negotiation.

We quote delivered to consumers' plants in Philadelphia and vicinity: Sheared steel plates on contract 1.60c to 1.75c; universal steel plates on contract, 1.60c to 1.80c; sheared plates for early delivery, 1.75c to 1.85c; universal plates for early delivery 1.80c to 1.85c. Plates from store are quoted at 2.15c to 2.25c delivered.

Structural Shapes.—Bids go in on Thursday for the 22,000 tons of fabricated or plain material for the Cristobal-Balboa transmission line, Panama canal. There is interested speculation whether the government will be able to get the deliveries desired, which run to five and six months. The Virginia Bridge & Iron Works has 500 tons for the People's National Bank, Lynchburg, Va., and the Belmont Iron Works 500 tons for column cores for the Metropolitan building, this city. Final bids are going in this week for the surgical building, University of Pennsylvania, requiring 600 to 700 tons. Extensions in prospect for the Baldwin Locomotive Works, Eddystone, Pa., will require a large tonnage. The Southern railroad is still figuring on 2,500 tons of car material. One southeastern car shop was recently obliged temporarily to suspend because of lack of material. Eastern shape mills are under the same pressure for deliveries and are running to full capacity. New business is not so heavy, but makers have plenty of tonnage booked to be independent for a while at least. Prices by eastern mills remain 1.60c, Pittsburgh, or 1.75c, Philadelphia. Some regular customers, however, have been able to buy at 1.50c, Pittsburgh. The larger Pittsburgh makers continue to quote 1.45c to 1.50c, mill, on forward contracts, and are booking some business for several months ahead.

We quote for delivery to consumers' plants in Philadelphia and vicinity: Structural shapes on contract 1.60c to 1.75c; for early delivery 1.80c to 2.00c; from warehouse stacks, 2.15c to 2.25c.

Semi-Finished Material.—A leading steel maker has purchased about 8,000 tons additional of open-hearth billets from an eastern Pennsylvania producer

for shipment between now and the end of the second quarter. The price paid was $28, mill, or about $28.60, delivered. This purchase practically exhausts the free steel which this maker has to sell up to the third quarter. It develops a Wheeling mill will furnish about 10,000 tons of Bessemer billets to the New Jersey consumer who recently closed for all year delivery. This contract was originally reported as having gone to an eastern Pennsylvania maker. A southern buyer is inquiring for 600 tons. There continues a heavy demand for crude steel in all forms and leading eastern makers have difficulty to keep up with their contract obligations. The Alan Wood Iron & Steel Co. has increased considerably the output of its Ivy Rock steel works by rearranging and improving its mill equipment.

We quote delivered to consumers' plants in Philadelphia and vicinity 4 x 4-inch open-hearth and Bessemer rolling billets at $29 to $31 and forging billets at from $36 to $40.

Sheets.—The sharp demand for sheets in eastern districts keeps up steadily and eastern Pennsylvania makers are keeping their capacities booked for some weeks ahead. Prices remain firm as quoted.

We quote for delivery to consumers' plants in Philadelphia and vicinity, No. 10 gage blue annealed sheets at from 1.95c to 2.10c.

Coke.—First grade Connellsville furnace coke in lots of 5,000 to 10,000 tons monthly was offered to eastern buyers this week at $3, ovens, on first half contracts. This is the lowest price that has appeared in the east for many months. Spot coke also continues to weaken, buyers in the district having obtained material on a descending scale. Last week $3.50, ovens, was paid compared with $3.75 and $4, ovens, respectively, two and three weeks ago.

Old Material.—The extremely light demand for scrap materials is unchanged and the market seems even weaker. Consumers of heavy melting steel claim purchases in lots of 1,000 tons at $13.50, delivered, but open offers of $14, delivered, from two large buyers are current, and no great amount of material is being obtained at these figures. Cast scrap is decidedly weaker due to the withdrawal from the market of the cast iron pipe foundries which have been liberal buyers at $15.50 and even higher, delivered. A moderate movement in railroad wrought is noted. Car wheels continue in good demand for both domestic and export markets and sales are being made from week to week at the range of $16.50 to $17, eastern Pennsylvania.

We quote gross tons delivered to consumers' plants in eastern Pennsylvania and western New Jersey, as follows:

Old iron rails	$18.50 to 19.00
Old steel rails (rerolling)	16.50 to 17.00
No. 1 heavy melting steel	13.75 to 14.25
Old car wheels	16.50 to 17.00
Old iron axles	27.00 to 28.00
Old steel axles	20.50 to 21.50
No. 1 railroad wrought	16.00 to 16.50
Wrought pipe	13.00 to 13.50
Cast borings	11.00 to 11.50
Machine shop turnings	11.25 to 11.75
Heavy cast (broken)	15.00 to 15.50
Malleable	13.50 to 14.00
Stove plate	11.00 to 11.50
No. 1 forge	13.00 to 13.50
Low phosphorus	19.00 to 19.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J., $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

BIRMINGHAM

Buyers Await Developments

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., Jan. 28.

Pig Iron.—The trade has not taken hold for its requirements other than already provided, but, to the contrary, is apparently more disposed to await further developments. In the meantime, Birmingham iron has been offered at $13.50 per ton for No. 2 foundry by those parties who have engaged more tonnage than is required, and the majority of the producing interests have adopted a basis of $14, at Birmingham, for No. 2 foundry to cover the entire first half. The sales that are being made at the prices referred to are not large in the aggregate, and in fact, the demand has not been stimulated by the reduction. Some tonnage of low grades has just been placed, but only at a differential of 50 cents per ton on the No. 3 foundry price, and for shipment as required in the first half at those figures. The aggregate of all sales made in the week is probably less than 1,200 tons, with a basis of $14, at Birmingham, the highest price paid in any transaction. At the same time, shipments have been made at a very fair rate all through the month, and reports indicate a gradual increase in the rate of consumption. As to just what action will be taken by the furnace companies, it is believed that much depends upon the stock showing as of Feb. 1, and upon the extent to which re-sale iron continues to be offered. The volume of inquiry still indicates that a large tonnage is to be placed for the requirement in the first half, while no sales have been reported to cover the last half requirement; yet it has been arranged to carry on order books a considerable tonnage that was sold for delivery in the past year, and as such tonnage will to a certain extent take the place of the tonnage already engaged for the first half, it is possible that the trade is covered much further in advance than order books indicate. It is certain that for the present no section of the trade is anxious to increase its engagement.

Basic and charcoal iron is considered firm at the prices below, for delivery in the first half, but the conditions existing relative to foundry grades are such that it cannot be said with accuracy just what can be done. The prices being quoted for the first half are as below, per gross ton, f. o. b. cars at Birmingham furnaces, viz.:

No. 1 foundry	$14.00 to 14.50
No. 2 foundry	13.50 to 14.00
No. 3 foundry	13.00 to 13.50
No. 4 foundry	12.50 to 13.00
Gray forge	12.00 to 12.50
Mottled	11.50 to 12.00
Standard basic	14.00 to 14.50
Off basic	11.00 to 11.50
Charcoal	25.00 to 25.60

Old Material. — Dealers' asking prices have not been changed, but in view of the condition of the pig iron market, it is not believed that the same figures can be obtained as were obtainable one week ago. The movement of the several grades is fairly steady, and accumulations on yards have not increased. In this last, a very conservative course is being followed, especially as to the stocking of light cast and stove plate. The demand for melting scrap and relaying rails still predominates, although a smaller territory is represented than formerly, owing to the conditions existing in the northern and eastern markets. Nominal asking prices on local dealers' yards are about as follows, per gross ton, viz.:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	15.50 to 16.00
Old iron rails	15.50 to 16.00
No. 1 R. R. wrought	13.00 to 13.50
No. 2 R. R. wrought	11.50 to 12.00
No. 1 country wrought	10.00 to 10.50
No. 2 country wrought	9.00 to 9.50
No. 1 machinery cast	11.50 to 12.00
No. 1 steel scrap	11.00 to 11.50
Tram car wheels	11.00 to 11.50
Standard car wheels	13.00 to 13.50
Light cast and stove plate	10.00 to 10.50

An Independent Company. — The Metallic Packing & Mfg. Co., Elyria, O., states that, regardless of any statements to the contrary, neither its factory or its product is controlled in any way by other parties connected with the sale or manufacture of fibrous or other packings. The company is not a branch of any other company, but is absolutely independent.

NEW YORK

Heavy Railroad Orders Pending

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Jan. 28.

Iron Ore.—A small lot of resale Wabana, Newfoundland, ore has been taken by an eastern Pennsylvania furnace at 7½ cents per unit, tidewater, equivalent to about 8½ cents per unit, delivered. This sale represents ¼ of a cent per unit over the price at which the allotment of Wabana ore for the current year's delivery was sold to eastern buyers. The strike conditions in the Port Henry ore districts at latest reports are showing improvement and the operators report that they do not believe their customers will be seriously inconvenienced by delayed shipments during the present conditions. The mines are now producing more than half of their normal output. Cuban operators are still having some trouble to get sufficient shipping tonnage to move the quantities of ore desired and are adverse to accepting less than 8½ cents per unit, tidewater, for any further sales.

Pig Iron.—The recent quiet condition of the market has developed some softness in furnace prices and sales have been made in this district during the week at lower levels. While eastern furnaces generally show no disposition to force the market, with buyers in their present indifferent state, several interests have shown more willingness to shade former schedules where the tonnage is attractive. The market has been so quiet, however, that these cases have necessarily been few in number. A Plainfield, N. J., machinery builder closed for 1,200 tons of practically No. 2X quality for second and third quarter shipment at $17.70, delivered, the metal to be furnished by a Lehigh valley maker. Makers of standard iron in the Lehigh and Schuylkill valleys generally have been holding the market at $17.75, furnace, or practically $18.50, tidewater, and they have continued to book small orders on this basis. The shading in such schedules, however, has usually not exceeded 25 cents. A maker in the Lebanon district is quoting $17, furnace, for No. 2X, or practically $18, tidewater, and has sold 3,500 tons of No. 2X to a New England buyer for second quarter shipment at this price, or $18.90, delivered. Small sales of Pennsylvania iron to New England districts at $19, delivered, are also noted. A Buffalo maker, which has been selling liberally during the past several weeks over the range of $17 to $18, furnace, for No. 2X, for delivery in some cases to the end of the year, has booked probably 25,000 tons at a good average. Virginia No. 2X is quoted $15.50 to $16, furnace. A Tennessee maker, which had sold liberally at $13.50, Birmingham, for No. 2 is on the point of advancing its schedules back to $14. Two southern makers have sold about 5,000 tons of No. 2 for shipment to Genoa and Mediterranean ports and are understood to have obtained about domestic prices for the metal.

We quote as follows:

Northern foundry No. 1	$18.50 to 18.75
Northern No. 2X foundry	18.25 to 18.50
Northern No. 2 plain	18.00 to 18.25
No. 2 Virginia	18.30 to 18.80
No. 2 southern foundry	18.50 to 18.75
Malleable	19.50 to 20.00
Gray forge	17.50 to 17.75

Ferro-Alloys.—Pending inquiry for ferro-manganese consists of only a few hundred tons for early shipment. The market continues squarely on a basis of $65, seaboard, for prompt and forward shipment. Sales of 400 and 100 tons on this basis are noted. The largest buyers of 50 per cent ferro-silicon in this country have covered to the end of the year and it is believed that present prices, barring drastic tariff action, are pretty well established for months ahead.

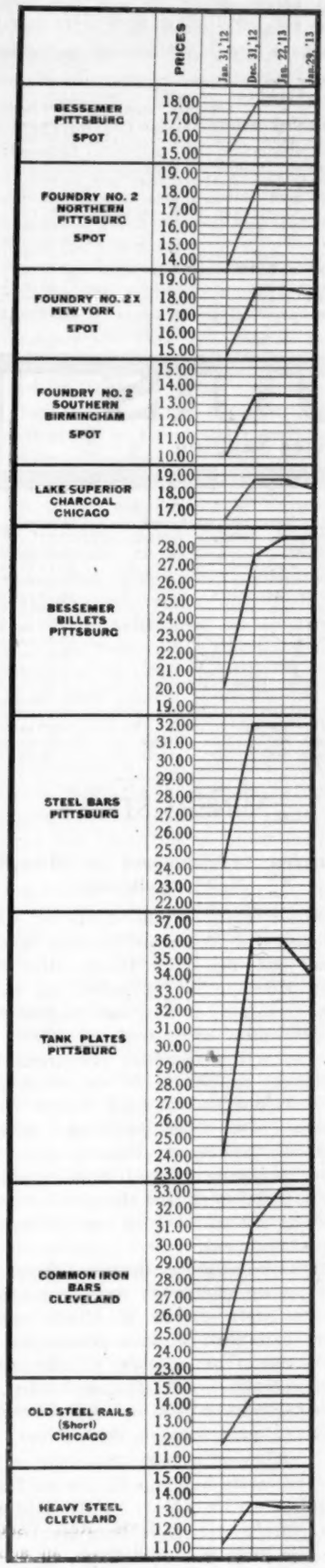
We quote standard English 80 per cent ferro-manganese at $65 to $68, seaboard, for early and for first half shipment and $65 for second half; 50 per cent ferro-silicon on contract at $75, Pittsburgh or Philadelphia, for carloads, $74, for larger lots, and $73, for 600 tons or more.

Plates.—The Pennsylvania railroad has officially announced that it is in the market for a total of 12,300 freight cars, of which 10,000 will be additions and 2,300 replacements to present equipment. The division of this order will give the lines east 5,000 steel gondolas, 1,300 wooden side gondolas, 1,000 refrigerator cars, and the lines west 3,000 steel gondolas, 1,000 wooden side gondolas, 500 refrigerator and 500 box cars. The Baltimore & Ohio railroad, it is reported on good authority, is considering the purchase of about 6,000 additional cars. The Illinois Central has placed 1,000 gondolas with the Pullman Co. Makers of plates in the east are still booking some contracts for second quarter at 1.60c and 1.65c, Pittsburgh, and are able to get higher prices for practically prompt shipment. The larger Pittsburgh mills are quoting from 1.45c to 1.50c, Pittsburgh, and are accepting some business in the third and fourth quarters at these prices. New business does not seem so brisk but specifications are very heavy.

We quote, delivered at New York tidewater, for first quarter, 1.76c to 1.86c New York, on sheared plates. Some makers are asking $1 higher for universal plates. On third quarter and last half contracts, Pittsburgh district, makers are quoting 1.61c to 1.66c, New York.

Structural Material.—Bids went in today on the general contract for a section of the elevated railroad extensions in Queens to require about 12,000 tons. Cooper & Evans, who are reported to be working with independent mills, submitted the lowest bid. Bids have been asked for another section to close Feb. 24, requiring 24,000 to 25,000 tons. These elevated and subway extensions are now the largest structural contracts in immediate prospect in the metropolitan market. Milliken Bros., Inc., have 4,500 tons for transmission towers for the Phoenix Construction Co., in Utah; Ravitch Bros., 1,200 tons for a loft for the West Forty-fifth Street Co., West Forty-fifth street; the York Bridge Works, 500 tons for the Franklin breaker of the Lehigh Coal Co., at Wilkesbarre; the Belmont Iron Works, about 300 tons for Central of New Jersey improvements at Communipaw. Considerable structural tonnage is accumulating. Bids are now being asked for a 16-story building at Canal and Vestry streets, to require about 1,000 tons; upon a 16-story loft for the McMorrow Engineering & Construction Co., on West Thirty-fifth street, 1,200 to 1,500 tons; upon a 12-story loft on Fifty-fifth street, between Eighth and Ninth avenues, for the Standard Mail Order Co., about 2,000 tons, of which Isaac C. Hopper, Inc., has the general contract; upon a 12-story apartment at 303-5-7 West Seventy-second street, about 800 tons, for the Anthony Compagna Construction Co. Plans are being prepared for a 12-story office and loft at 31-33 East Twenty-eighth street, for a 12-story apartment at Broadway and 107th street and for a store and office building at Court and Jarolemon streets, Brooklyn, for the Wein Bros. Real Estate Co. Inquiries are pending for an additional area for the New York Central terminal, this city, about 1,200, and

PRICE CHART



for 400 tons for a high school building at Girard College, Philadelphia. Eastern shape makers continue to quote generally at 1.60c, Pittsburgh, or 1.76c, New York. There is some contracting by Pittsburgh shape makers for third and fourth quarter at 1.45c to 1.50c, Pittsburgh.

We quote for New York delivery for first quarter as follows: Structural shapes, 1.66c to 1.76c. On third quarter and last half contracts, Pittsburgh district makers are quoting 1.61c to 1.66c New York.
Structural shapes from store, 2.15c.

Iron and Steel Bars. — The larger steel bar makers continue to make some forward contracts at 1.45c, Pittsburgh, but these are for the third and fourth quarters, as no deliveries are available before that time on fresh business. Bar iron is firm and fairly active.

We quote for New York delivery, steel bars on contract from 1.56c to 1.61c and common iron bars at 1.65c to 1.75c. Steel bars from store are quoted at 2.05c.

Cast Iron Pipe. — Buying of cast iron pipe by water and gas companies which has been slacking since about the middle of December, showed considerable revival during the past week and a substantial amount of business which is pending. The United States Cast Iron Pipe & Foundry Co. took 3,300 tons of 4 to 30-inch pipe for Boston delivery at $23.60, delivered, which is considerably below the quotations of other makers. New Brunswick, N. J., will receive bids Jan. 29, for 375 tons and Ramsey, N. J., on Feb. 4, for 920 tons of 4 to 10-inch.

We quote six-inch pipe at from $24 to $26, f. o. b. New York, in carload lots.

Rails and Track Material.—It is becoming apparent that some of the large railroad systems delayed their purchases too long last year to insure their obtaining rail deliveries as early in the present year as they had specified. The Pennsylvania railroad is finding that it will not be able to have fully executed before midyear or beyond its order originally specified for early in the second quarter. An eastern mill has sold a northwestern road an order for rails for delivery in the first quarter of 1914. After a period of quietness, which was a natural outgrowth of the heavy buying over the last half, there has been a renewal of rail inquiry in the market. Several leading northwestern systems are now inquiring for a total of about 150,000 tons and in the south inquiries for about 30,000 tons are current. One of the inquiries for the northwest is 30,000 tons for the Great Northern. The Lorain Steel Co. has taken 1,000 tons of girders for Milwaukee, and 750 tons for Des Moines are pending. An inquiry for 3,000 tons of 55-pound rails for Ecuador is current.

Old Material. — The heaviness in scrap material has shown little change and the market continues soft. New buying is only fair, but consumers feel in no great need for additional material. The highest offers obtainable on heavy melting steel are now $14, delivered, eastern Pennsylvania.

We quote, gross tons:

Old car wheels	$13.50 to 13.75
Old iron axles	22.00 to 22.50
Steel axles	16.00 to 16.50
Old steel shafting	15.50 to 16.00
No. 1 heavy melting steel	11.75 to 12.00
No. 1 R. R. wrought	14.25 to 14.50
Wrought pipe (not galvanized)	11.00 to 11.25
Cast borings	8.75 to 9.00
Machine shop turnings	8.75 to 9.00
Heavy cast	12.00 to 12.50
Stove plate	9.50 to 10.00
Grate bars	8.00 to 8.25

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixvile, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York

REGULATION IS HELD

Says Schwab at Annual Meeting of Engineers.

Charles M. Schwab, president of the Bethlehem Steel Co., South Bethlehem, Pa., and F. Hopkinson Smith, author, artist, lecturer and lighthouse builder, were the speakers Monday night at the annual banquet of the Engineers' Society of Western Pennsylvania, held at Pittsburgh. More than 800 engineers and officials of iron and steel companies were present. A medal was presented to Ferdinand G. Gasche for his paper on "The Theory of the Steam Accumulator and Regenerator Processes". Mr. Gasche is identified with the Illinois Steel Co.

In his address, Mr. Schwab repeated his assertion, made on previous occasions, that governmental regulation of industries was making toward greater prosperity and efficiency. "We have only started to regulate our industries and are beginning to appreciate the fact that regulation is not causing harm and financial depression," he said. "When the government started to regulate our railroads several years ago, we feared that ill results would come. Investigations and consequent regulation have proved beneficial to railroads and we will find that the same will apply to our industrial interests."

Mr. Smith spoke on "The Make-up of a Gentleman". John A. Brashear, known as the "first citizen" of Pittsburgh, acted as toastmaster.

The Rommel Motor Car Co., Louisville, Ky., has increased its capital from $15,000 to $25,000.

BUFFALO

Light Pig Iron Sales—Heavy Specifying

Office of THE IRON TRADE REVIEW,
Buffalo, Jan. 28.

Pig Iron.—The cross current of light sales and heavy specifying continues to represent the market condition in this district. The placement for the week was the lightest in some time. On the other hand, favorable weather conditions have been conducive to capacity production of the stacks and have afforded the railroads the opportunity to freely move the large tonnages of iron demanded by the consumers from the furnaces here. There is no apparent let-up in the volume of specifying and no apparent let-down in prices, because of the lack of buying, although some of the interests are selling nearer the minimum than the maximum of the range quoted below. Prices, f. o. b. Buffalo, for the week are as follows:

No. 1X foundry	$17.50 to 18.25
No. 2X foundry	17.25 to 18.00
No. 2 plain	17.00 to 17.75
No. 3 foundry	16.75 to 17.50
Gray forge	16.50 to 17.25
Malleable	17.25 to 18.00
Basic	18.00 to 18.25
*Charcoal	18.00 to 19.00
*Some grades	21.75

Finished Material.—A number of the mills and agencies in the territory booked large tonnages of various steel products, including bars, plates and structural shapes during the week, for delivery over the last half of the year. This business was practically forced upon the mills because of their sold-up condition. Buyers realize that the situation confronting them is the fact that they will be hard pressed to get steel as the year advances, to say nothing of attempting to get more favorable prices. Some of the interests decline to book orders for last half delivery and what little tonnage they accept, to fill out the requirements of established customers, is only taken subject to "convenience of the mills". One large producing interest has issued a new form of contract covering orders for last half delivery. This has the additional clause of requiring monthly quotas to be specified not later than the fifteenth of the month preceding the one of shipment. This form of contract is being applied to bookings for bars, shapes and plates.

The Buffalo Structural Co., Buffalo, has received the contract for the steel to be used in the new Masten Park high school, Buffalo, requiring about 1,500 tons. Bids for the new Hutchinson high school, revised, are being advertised by the city and will be opened Feb. 21, requiring fully 1,500 tons of structural. The Otis Elevator Co., Buffalo plant, is to build a foundry addition, 107 x 400, requiring about 700 tons of structural. Green & Wicks, Buffalo, architects. Bids will soon be taken.

Old Material.—The continued inactivity and the absence of buying, except in scattered amounts of small tonnages, has caused prices to soften as indicated below in practically all of the lines with the exception of car wheels. The demand for them has been sufficient to maintain the price which has prevailed for the past few weeks. The range for the week, f. o. b. Buffalo, on gross tons, is substantially as follows:

Heavy melting steel	14.50 to 15.00
No. 1 railroad wrought scrap	15.00 to 15.50
No. 1 R. R. and mch. cast sc'p	13.75 to 14.25
Old steel axles	15.50 to 16.25
Iron axles	23.00 to 23.50
Car wheels	16.50 to 17.00
Railroad malleable scrap	13.25 to 13.50
Wr'ght iron and soft steel turn.	8.50 to 8.75
Cast iron borings	8.00 to 8.25
Low phosphorus steel scrap	16.50 to 17.00
Old iron rails	15.00 to 15.50
Tank iron	10.25 to 10.50
Boiler plate, sheared	14.50 to 15.00
Pipe and tank	10.00 to 10.50
Stove plate	11.25 to 11.75
Sheet iron	7.75 to 8.25
Locomotive grate bars	11.00 to 11.50

ST. LOUIS

Pig Iron Dull—Prices Sagging

Office of THE IRON TRADE REVIEW,
St. Louis, Jan. 28.

Pig Iron.—The St. Louis market is about devoid of inquiry for pig iron, except the usual car lot orders, and the price has dropped on southern No. 2 to $13.25 to $14, Birmingham basis. Some furnaces, however, are holding out for an advance of 50 cents. The inquiry for 2,000 tons of car wheel pig iron, which has been out for two weeks, probably will be placed Tuesday or Wednesday. About the only good business that was placed last week was the round tonnage of basic, which was purchased on the quiet. Other grades of southern iron are quoted lower than last week. Northern iron is unchanged at Chicago and Ironton. Our tabulated prices on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$17.25 to 18.25
Southern No. 2	17.00 to 17.75
Southern No. 3	16.50 to 17.25
Southern No. 4	16.00 to 16.75

Old Material.—Prices of scrap iron have weakened considerably. No business is being transacted, and none is seriously looked for until next month. The dealers are confident the mills have many orders and will soon be in need of material, when the price probably will advance, and the market become steady again. Prices which dealers are willing to pay, f. o. b. St. Louis, follow:

Gross Tons

Old car wheels	$15.00 to 15.50
Old iron rails	14.50 to 15.00
Rerol'g rails (5 ft. and over)	15.50 to 16.00
Old st'l rails (3 feet and under)	14.00 to 14.50
Light section relayers (45 lbs. and under) subject to inspec.	24.00 to 25.00
Relay'g rails, subject to inspec.	24.00 to 25.00
Frogs, switches and guards	13.50 to 14.00
Heavy melting steel	13.50 to 14.00
Shoveling steel	11.75 to 12.00

Net Tons

No. 1 railroad wrought	$12.50 to 13.00
No. 2 railroad wrought	12.00 to 12.50
Arch bars and transoms	15.00 to 15.50
Knuckles, couplers, springs	12.00 to 12.50
Shafting	15.00 to 15.50
Steel car axles	18.50 to 19.00
Iron car axles	20.00 to 21.00
Locomotive tires	12.50 to 13.00
Pipe and flues	7.50 to 8.00
Tank iron and cut boilers	7.50 to 8.00
No. 1 cut busheling	10.50 to 11.00
No. 2 cut busheling	8.50 to 9.00
Cast and mixed borings	7.25 to 7.75
Machine shop turnings	8.75 to 9.25
R. R. malleable	11.50 to 12.00
Agricultural, malleable	10.00 to 10.50
Stove plates	9.00 to 9.25
Angle splice bars (iron)	13.50 to 14.00
Angle splice bars (steel)	12.50 to 12.75

MINERS STRIKE

Number of Employes at Mineville, N. Y., Walk Out.

About half of the 1,200 to 1,500 employes of Witherbee-Sherman & Co., Inc., and the Port Henry Iron Ore Co., Mineville, N. Y., struck last week. The demands of the men include the reinstatement of two of the officers of the union who had been discharged, the complete recognition of the union and a reduction in working hours. The mines have been operating steadily and the number of men at work has been increasing daily. It is not expected by the operators that there will be any serious interruption of ore shipments to the furnaces.

The discharge of the two officers of the union followed their appearance before state officials at Albany, where they attacked working conditions at Mineville. The officials of the companies have urged state authorities to make an immediate and full investigation of conditions in their mines.

The realty holdings of the St. Louis Blast Furnace Co., recently sold under foreclosure, have been transferred to the State National Bank, St. Louis, and will be placed on the market.

CONFUSED CONDITIONS

In the Cotton Tie Market—Fear of Action of Congress.

Conditions in the cotton tie market, where a shortage of supply for the coming crop, has been threatened, are still more or less confused and it cannot be said finally at this time whether or not the cotton planters will be forced to face a serious situation in getting their yield in proper form for handling for the market.

Present conditions have arisen largely because the cottom tie market at best is not a very attractive one to manufacturers. This is because the product is rolled during the winter, shipped to the south to warehouses and does not reach the consumer until well along in the summer, making the sale, therefore, a long credit transaction. At the present time, when manufacturers usually should be well along with the rolling of ties for the coming season, the tonnage manufactured is much below normal and it is understood that some independent makers have determined to produce none of this material at all this year. The reason for this is that hoop prices at their present level are much more attractive and makers are adjusting their operations more to the accommodation of this demand. The result is that the responsibility for supplying the needs of the cotton planters has been placed more heavily upon a few makers who are continuing to roll this product and it remains a question whether they will be able to meet the full demand. Practically no stocks of ties are carried over from season to season and European mills, in their present filled up condition, offer to buyers little hope for relief from that direction.

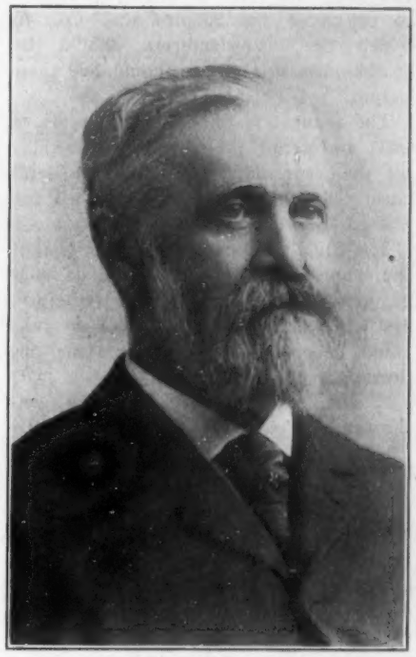
Political conditions moreover are entering into the situation, since the reports from Washington are to the effect that cotton ties will probably be placed upon the free list. If this action results, its effect will possibly not be felt for a year or more. In the meantime, those makers continuing to roll ties see little inducement in the situation for them to exert themselves to fill not only the coming season's demand of their own customers, but in addition, to supply the increased tonnage that will be directed to them by the withdrawal of some of the mills which have shared in the production up to this time.

Motive Power Orders.—The Baldwin Locomotive Works has taken orders for 25 locomotives of the Mikado type, for the Rock Island, four Mikados and four passengers, for the Duluth & Iron Range and three of the Pacific type, for the Duluth, Mesabi & Northern.

FOUNDED FIRST PLANT

George M. Sargent, Pioneer Brake Shoe Maker, Passes Away.

George Myrick Sargent, Evanston, Ill., founder of the first plant in the United States devoted exclusively to the manufacture of brake shoes, and active for many years in railway appliance and supply industry, died at Atlantic City, N. J., Jan. 16, at the age of 83. Up until the time of his death, Mr. Sargent was a director of the American Brake Shoe & Foundry Co. Born in Sedgwick, Me., March



GEORGE MYRICK SARGENT

29, 1830, he was engaged in business in the east for several years, and entered the iron industry at Moline, Ill., in 1870, as part owner of the Moline Malleable Iron Works. In 1876, he moved to Chicago, where he invented, designed and improved a brake shoe subsequently known as the "Congdon", and organized a company for its production under the name of George M. Sargent & Co. In 1878, this company was incorporated under the name of the Congdon Brake Shoe Co. In 1893, a new corporation was formed, known as the Sargent Co., of which Mr. Sargent was president. This company operated two plants. In 1901, the American Brake Shoe & Foundry Co., organized by Mr. Sargent and others, purchased the Chicago Heights plant of the Sargent Co. Shortly afterward, the Fifty-ninth street plant of the Sargent Co. was acquired by the American Steel Foundries. In 1901 Mr. Sargent was elected vice president for Illinois of the National Association of Manufacturers. He was a member of the First Methodist church of Evanston and belonged to various clubs, including the Union League, Glen View and Evanston.

QUARTERLY STATEMENT

Of Corporation Earnings — Comparison With Past Years.

The gross earnings of the United States Steel Corporation during 1912 were $107,637,520 compared with $104,305,466 in the preceding year, a gain of $3,332,054. The net earnings for the same periods were $79,018,792 and $84,536,335, a net loss of $5,517,543. In 1910, both gross and net earnings were considerably higher, the former being $141,054,755 and the latter $116,738,157. Gross earnings in 1909 were $131,491,414, in 1908 $91,847,711 and in 1907 $160,964,674.

The report for the final quarter of 1912 shows gross earnings of $35,185,557, an increase of $5,662,832 over the previous quarter. The report shows the heaviest earnings of the year were made in the closing three months of last year. Net earnings in the final quarter were $25,764,926, compared with $22,716,157 in the third quarter.

Surplus net income for the last quarter amounted to $7,410,979, leaving a balance surplus of $3,610,129 for the year against $4,735,462 at the close of 1911. At the end of 1910, a balance surplus of $10,928,719 was carried forward.

Chairman E. H. Gary in a statement referred to the report as remarkably good and spoke optimistically of the future. The regular dividends on the common and preferred stocks were declared.

The earnings by quarters last year were as follows:

	Gross.	Net.
March 31	$17,826 973	$12,108,415
June 30	25,102,265	18,429,294
Sept. 30	29.522,725	22,716,157
Dec. 31	35,185,557	25,764,926
	$107,637,520	$79,018,792

Foundrymen's Dinner. — The Chicago Foundrymen's club has made arrangements for a turkey dinner to be held at the Auditorium hotel, Chicago, Saturday evening, Feb. 8. This is the first of a series of get-together meetings in which it is hopel to interest all of the foundrymen of Chicago.

ROYALTY PAID

On Hill Lands Too High Says Witness in Corporation Suit.

New York, Jan. 28.—P. H. Nelson, who testified that he is engaged in the exploration of iron ore land on the Mesabi and Cuyuna ranges, was the witness today in the United States Steel Corporation dissolution suit hearings.

In 1898 or 1899, Mr. Nelson first began his exploration work on the Mesabi range. He first located about 3,500,000 tons of merchantable ore on Section 6, and later a considerably larger body on Sections 29 and 32. The latter, he said, became known later as the St. Anthony property. The royalty and other charges, which he had to pay on this property, amounted to 29 cents per ton. The St. Anthony lease was sold to the Hill interests for about $45,000. Mr. Nelson next explored the Lewis lease, and in 1904 this was sold to the Hill interests. Shortly prior to the date of the sale, said Mr. Nelson, he received an offer for the property on almost the same terms, from a representative of the Steel Corporation.

Mr. Colton handed a volume of about 1,000 pages to Mr. Nelson, requesting him to "glance through it". It was a copy of the Hill ore lease. Mr. Colton asked the witness if he thought the royalty stipulated in the lease was too high. In his opinion, Mr. Nelson said it was too high. Counsel for the defense objected to this testimony on the ground that the witness was not qualified to give an expression of authority in this matter.

Walter Scranton, formerly president of the Lackawanna Steel Co., who was called to the stand late Monday afternoon, told of a sort of pool within the old pool. The members of the pool, which involved only rails, he said, were, at different times, the Pennsylvania, Carnegie, Illinois, Cambria, Lackawanna and Bethlehem Steel companies. This pool was formed originally in 1889 or 1890 and, with various breaks from time to time, continued for many years. Outside of the general agreement to which all the members of the pool were a party, the Carnegie and Illinois Steel companies had a separate agreement of their own.

"How did you come to know about that?" asked Mr. Colton.

"They had some kind of a disagreement," said Mr. Scranton, "and they asked the rest of us to appoint a committee to arbitrate it. I don't remember what the difficulty was."

Andrew Carnegie, said Mr. Scranton, gave the members of the pool a great deal of trouble.

"Did Mr. Carnegie's method of competition give rise to any feeling on the part of the other manufacturers in respect to his continuance in the rail business?" asked Mr. Colton.

"There was a general feeling," replied Mr. Scranton, "that it would be a Godsend if Carnegie would get out of the rail business."

Mr. Colton produced a letter written by Mr. Carnegie in which the latter referred to the practice, under the rail pool, by which any manufacturer who sold more than his allotment paid $2.50 a ton into the pool, which went to the members who sold less than their allotments. In this letter, Mr. Carnegie said he was tired of playing second fiddle and thought it less profitable even with the penalty of $2.50, than taking the lead and selling more rails himself.

Mr. Carnegie, said Mr. Scranton, was also responsible for the failure of a scheme, after the breaking up of the rail pool, to form a selling company, to be called the Empire Rail Co., in which the manufacturers should be stockholders and which should buy their output.

The witness testified that Judge Gary used to attend the rail pool meetings as the representative of the Federal Steel Co. prior to the formation of the United States Steel Corporation.

The Steel Corporation, said Mr. Scranton, cannot control prices but its suggestions are very carefully received. He was asked if the $28 price on rails could be maintained without some understanding.

"I should think there was some understanding."

Heavy Business Pending

New York, Jan. 29. (By wire.)—The battleship Pennsylvania, on which bids close on Feb. 18, will call for about 15,000 tons of hull and protective deck plating in addition to 5,000 to 7,000 tons of armor plate. Bids are being asked for 6,000 tons for the San Francisco city hall.

Some unusually large locomotive orders are being shaped for early letting.

Death of Robt. L. Sleeth

Robert L. Sleeth, 85 years old, vice president of the Seaman-Sleeth Co., Pittsburgh, manufacturer of rolls, died Jan. 24 at San Diego, Cal. He learned his trade as a molder in the old Mitchell foundry, Pittsburgh, and later was employed at the Fort Pitt Foundry, where he molded some of the first cannon used in the civil war. He was superintendent at the old Smith foundry and later become foreman of the foundry operated by Bollman, Boyd & Bagealey. In 1870, he became a partner of the firm of A. B. Young & Co., organized as the Phoenix Roll Works. In 1896, this firm was incorporated as the Seaman-Sleeth Co., of which he was elected vice president.

METAL MARKETS

New York

Jan. 28.

Tin.—The reaction in prices from last week's level attracted a good volume of inquiry from tin consumers and considerable metal has been disposed of this week. Arrivals of fresh supplies have relieved the shortage of prompt stocks here, felt throughout the first half of the month, and local prices are again close to the cost of import. Spot and January closed today at 49.75c in the outside market, and February at 49.62½c. Spot standard tin closed firm in London today at £227. On advice of large shipments from the East futures were soft at £224. The Banka auction will be held Jan. 29.

Lead.—The demand for lead continues dull, but quotations hold fairly steady at 4.25c to 4.35c in New York.

Spelter.—Bids in the outside spelter market, that are under 7.25c in New York, are not readily supplied, but offers to sell on the metal exchange are about 10 points under that price.

Chicago

Jan. 28.

New Metals.—The market for new metals in this territory is quiet, but prices are somewhat steadier.

We quote dealers' selling prices f. o. b. Chicago as follows:

Lake copper, carload lots, 16½c; casting, 16⅛c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 7c; lead, desilverized, 4.22½c; sheet zinc, 9c, f. o. b. Lasalle, in car lots of 600-pound casks; pig tin, 49.97c. Cookson's antimony, 9⅞c; other grades, 9c.

Old Metals.—The market as a whole appears to be on a little firmer basis. The reflection of the weakness in copper continues to be felt and quotations are still unsettled.

We quote dealers' selling prices f. o. b. Chicago as follows:

Copper wire, crucible sheets, 17c; copper bottoms, 14½c; heavy red brass, 13¾c; heavy yellow brass, 10¼c; No. 1 red brass borings, 12½c; No. 1 yellow brass borings, 9.25c; brass clippings, 10½c; lead pipe, 4½c; zinc scrap, 5½c; tea lead, 4c; No. 1 aluminum, 20c; No. 1 pewter, 36c; block tin pipe, 47c; tin foil, 40c; linotype dross, 3½c; stereotype plates, 4c; stereotype dross, 3.50c; prime slab zinc dross, $131 a ton.

The Desulphurization of New Jersey Iron Ore

The Adaptation of the Wedge Kiln, Used for Roasting Copper Ores, to the Desulphurization of Eastern Iron Ores

The ore deposits of the Adirondack mountains, and of New Jersey and New York, are for the most part, magnetic. This has led to the installation of many electric concentrating plants. Moreover, some of the ores are so high in sulphur as to render them unfit for direct use in the production of good grades of pig iron. As a result, some method of desulphurization before smelting seemed imperative, and the Empire Steel & Iron Co., owners of the Washington mine at Oxford, N. J., installed a Wedge type roasting furnace. This type of furnace, while common in the treatment of copper ores, had never before been used in the desulphurization of iron.

At this mine there has been inaugurated a series of extensive improvements, surface and underground, which has made it one of the most modern and efficient workings in the New Jersey ore belt. The company is fortunate in having its Oxford blast furnace nearby, the waste gases from which furnish power for the air compressors and dynamos at the mines. The mining is being conducted on the overhead stopage system, levels being run about 150 feet apart, and the dislodged ore let down by gravity. This has greatly reduced the drilling, timbering and breaking costs, and has increased the output. The present production is from 10,000 to 11,000 tons of crude ore, and from 9,000 to 10,000 tons of treated ore per month.

The ore is a magnetic, non-Bessemer, analyzing, mine run, about as follows: Iron, 57 to 59 per cent; silica, 7 to 8 per cent; phosphorus, 0.60 per cent, and sulphur, 2.50 to 3 per cent. From the analysis, it is evident, that the process of preparing this ore for the smelter should be a dual one, involving two separate and distinct treatments, namely, concentration and desulphurization. In studying these operations, as performed at the Washington mine, it will be best to start at the ore bed and follow the different steps in their natural sequence.

There are two hoists handling 3-ton skips, which raise the ore from the mine to the head house and dump it into bins of about 20 tons capacity.

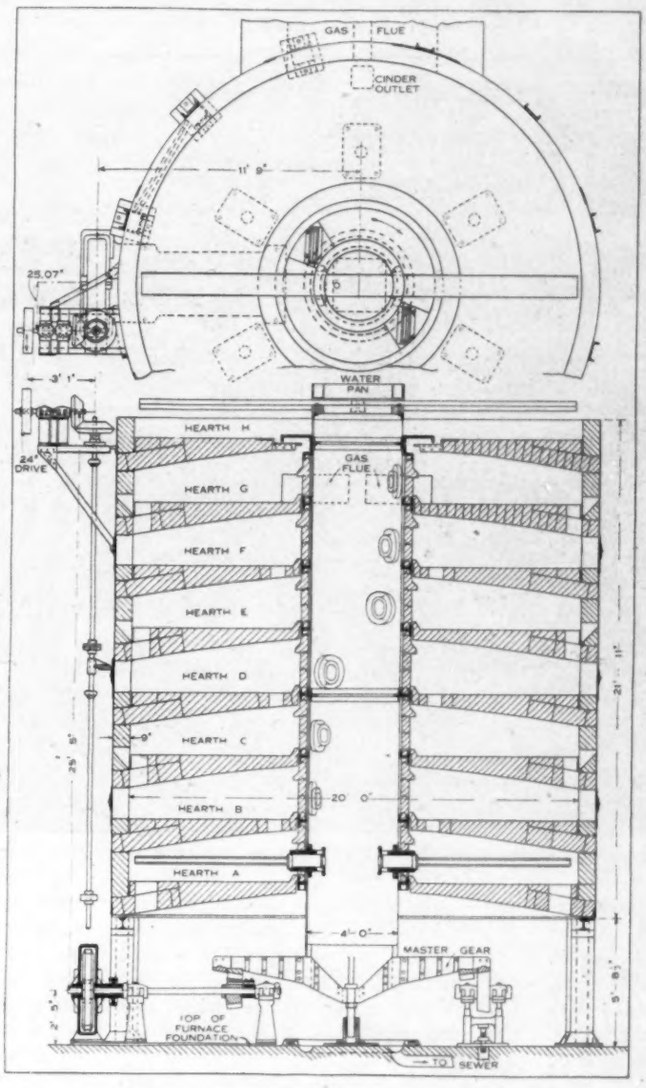


FIG. 1—SECTIONAL VIEW OF THE WEDGE FURNACE FOR DESULPHURIZING IRON ORE

From these bins it is delivered to an 18 x 36-inch Farrel jaw crusher, where it is reduced to a maximum size of about 3 inches and is discharged onto a bucket elevator which raises it to a revolving screen. This screen, which is 40 inches in diameter and 16 feet long, is divided into halves, the first half having slots ¼ x ⅞-inch, and the second is perforated to pass 2-inch sizes. The ore which passes the fine side of the screen is received in one bin and that which passes the coarse side, in another. Pieces larger than 2 inches, being unable to pass through either side of the screen, are delivered to a chute which discharges them into a No. 5 Gates gyratory crusher, where they are crushed to 2 inches or less, and re-elevated to the screen previously described.

The ore, having been sized to 2 inches and smaller, is delivered to the concentrating plant, which consists of two separators of the drum type, one for fine and the other for coarse screenings. These machines, which are not intended to accomplish a close separation, supplant the old method of hand picking from a belt, and are not only more efficient, but more economical. Each separator is provided with two bins of 150 tons capacity each, one for the concentrate, and the other for the rock. When the ore reaches these bins the concentrating process is complete, and it is ready for desuphurization. The capacity of this head house equipment is about 700 tons of cobbed ore daily.

In the desulphurization process, the coarse and fine concentrates travel separate routes; the coarse being treated in Gjier kilns, and the fine, in a Wedge type roasting furnace. The Gjier kilns for the treatment of the coarse ore, are 16 in number and are located near the mine. Each kiln is 17 feet in height by 15 feet in maximum diameter and has a capacity of about 175 tons. The daily output of each kiln is from 20 to 25 tons of ore averaging from 60 to 61 per cent iron, the sulphur content having been reduced to from 0.30 to 0.60 per cent. The kilns are filled at the top, alternate layers of anthracite coal and ore

being charged, and the roasted ore is drawn from the bottom each day.

In the desulphurization of the fine ore, an equipment new to the iron industry has been installed. This consists of a Wedge roasting furnace erected near the Oxford blast furnace for convenience in utilizing the waste furnace gases, and for ease in charging the roasted ores into the Oxford stack, as the greater part of the output is smelted by this plant.

A plan and vertical section of the Wedge furnace is shown in Fig. 1. The shell is a circular, steel, riveted stack, 27 feet 7½ inches high, and 20 feet in inside diameter. In this stack are eight circular hearts, designated *A*, *B*, *C*, etc., spaced 2 feet 9½ inches apart. In the center of the stack, extending upward through all of the hearths, is a hollow shaft, 4 feet in diameter, which is of double-plate, wall construction and is provided with water-cooling pipes within the walls. The weight of the shaft is supported by rollers as shown in Fig. 1.

The Hearths

Attached to this shaft and extending into each hearth are arms equipped with chilled cast iron blades, set 4 inches apart. This large shaft rests on a master gear shown at the base of the furnace in Fig. 1, and is driven by the countershaft shown at the left, extending from the bottom to the top, where its 24-inch belt drive pulley is located. As the large shaft revolves, the bladed arms attached to it sweep the full circumference of the hearths, and agitate and stir the ore so the single particles of the mass are directly exposed to the heat. The blades on each alternate arm are set at opposite angles so that the ore on one hearth is swept outwardly, and on the next, inwardly. This sequence of operations is carried on successively down through the furnace. Thus, in hearth *H*, the blades sweep the ore towards the center, where it falls through an opening into hearth *G*, in which the blades are set to carry it outwardly toward the periphery, where an opening lets it fall into *F* and similarly through the entire series to the bottom. The main shaft and bladed arms are water-cooled except on hearth *H*. The bottoms of the hearths are made of fire brick, and the steel shell has a similar lining, 9 inches thick.

The heat for the furnace is generated in hearth *B*. Each of the hearths has four small outside doors, and in *B* these serve for the introduction of a gas-burning outfit which utilizes waste gas from the blast furnace. This hearth also is provided with an auxiliary oil-burning equipment by which operation can be continued when the blast furnace is shut down. From hearth *B*, which operates at a temperature of from 1,100 to 1,300 degrees Fahr., heat is conveyed to the other hearths by draft. Each hearth is equipped with a pyrometer, and it is possible to regulate the temperature of each hearth practically independent of the others. By varying the heat on the hearths and adjusting the speed of the main shaft and agitator arms, the output of the furnace may be controlled as desired.

Oxford Installation

Figs. 2 and 3 show general views of the Wedge furnace at Oxford, which is located about three-quarters of a mile from the shaft of the Washington mine. From the bins at the head house, the fine ore is discharged into small hopper cars of 3½ tons capacity, and operate on a narrow gage track leading to the Wedge furnace. The trains run up on the trestle, illustrated in Figs. 2 and 3, and the ore is dumped from the cars into a bin which feeds it directly into hearth *H*, Fig. 1. From this first compartment, which is practically a drying hearth, the revolving agitator arms, previously described, slowly sweep the ore from each hearth to the next below, until it reaches the bottom, from which it is drawn off into two 5-ton bins, three or four times daily. When these bins are filled the ore is elevated by pan conveyors to a 150-

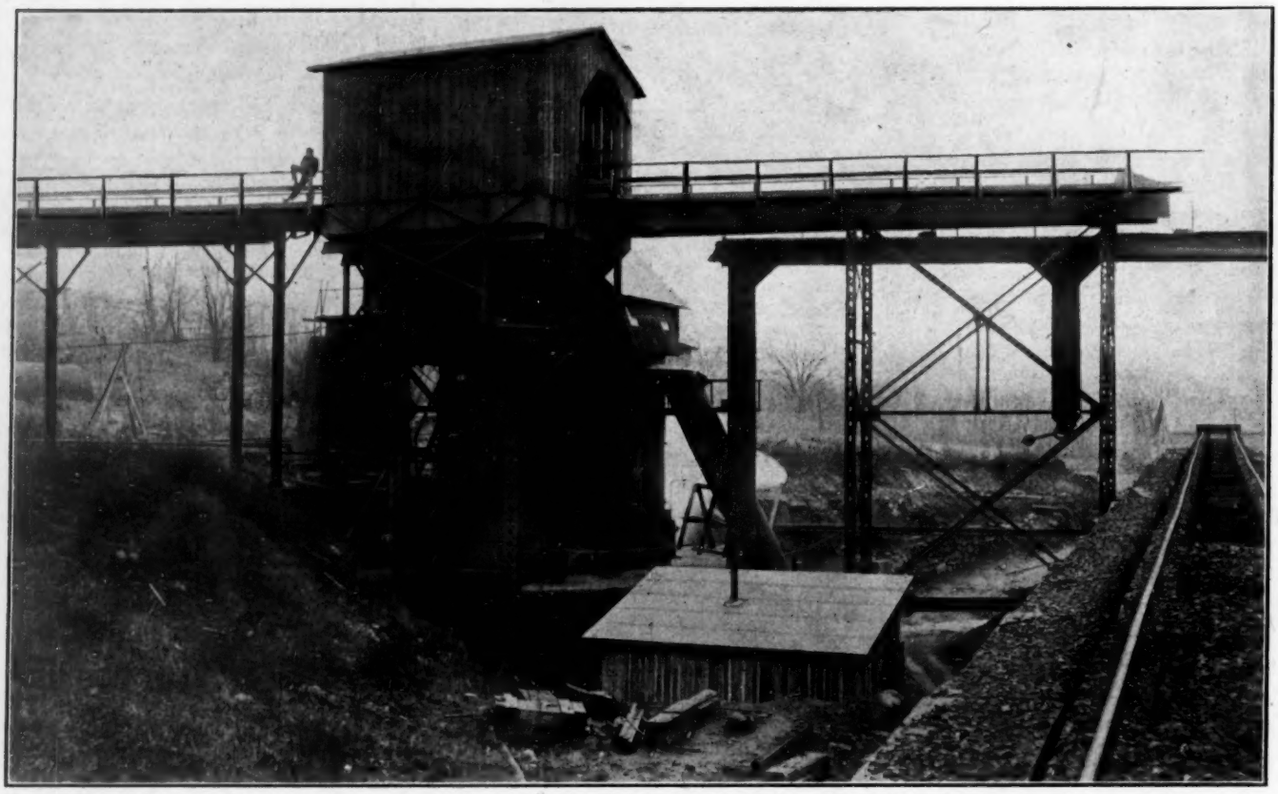


FIG. 2—GENERAL VIEW OF THE WEDGE FURNACE AND OVERHEAD TRESTLE

ton storage bin. This conveyor is driven by a chain and sprocket having a clutch control. The shaft of the roasting furnace and the conveyor and elevator are driven by an 18-horsepower steam engine operating on steam from the blast furnace.

The 150-ton storage bin is divided into two compartments, each having chutes, one for loading into cars for shipment, the other for filling buggies for charging the blast furnace. This single roasting furnace delivers, daily, from 80 to 90 tons of finished ore having a sulphur content of from 0.10 to 0.30 per cent in contrast to 2.5 or 3 per cent in the crude ore. The Wedge furnace was designed by Utley Wedge and is built by the Pennsylvania Salt Mfg. Co., Philadelphia.

FIG. 3—OVERHEAD VIEW OF WEDGE FURNACE, SHOWING TRESTLE FROM WHICH SIZED ORE IS FED INTO THE TOP HEARTH OF THE KILN. THE STORAGE BINS FOR THE DESULPHURIZED ORE ARE AT THE RIGHT

Maximum Weight of Foreign Shipments

Contracts for machinery and equipment for export often contain a clause specifying that no part or piece shall weigh more than a certain specified number of pounds. This maximum weight is dictated by the transportation facilities available at destination. Usually when any such clause is inserted it means that the machine or material will finish its trip on pack animals or will be carried by men.

Frequently, manufacturers unfamiliar with foreign trade, are inclined to look upon this maximum weight clause as an inconsequential joke. The perfect facilities available in the factory for handling a large piece make it extremely difficult to realize the almost superhuman task involved in taking the same piece up a narrow mountain trail, scarcely passable for a burro. The result is that even in a large shipment, if a single piece exceeds the specified weight, the difficulties of the erector on the ground are trebled, and he is not inclined to specify further shipments from the same manufacturer.

Crude Oil Engine Test

The Otto Gas Engine Co., Philadelphia, reports very striking results of a test of its 30 and 35-horsepower horizontal fuel oil engines, burning heavy crude oils. The test was made in the presence of engineers of the Standard Oil Co., and the fuel used was a heavy Mexican crude oil, having a heat value of 18,217 B. T. U. On a 10-hour test, the 30-horsepower engine consumed 1-15, and the 45-horsepower engine 1-16 of a gallon of oil per brake horsepower per hour, running at full load.

Denies Report—Charles M. Schwab, president of the Bethlehem Steel Co., strongly denies the report that he is in any way connected with a reported consolidation of a number of independent steel companies of the United States and Canada.

Iron and Steel Industries of Liege in 1911

Consul General Ethelbert Watts, at Brussels, has forwarded to the bureau of foreign and domestic commerce, in Washington, a report of the industrial activities of Belgium. Some interesting facts are given about the coal, iron and steel industries of Liege. The net profits of the coal mines amounted to $930,174 in 1911, a decline of $3,889 compared with 1910. The average daily wage of the workman was 84 cents, as compared with 85 cents in 1910. The total consumption of iron ore was 2,254,630 tons, of which only 11,230 tons were of native origin, while 1,713,780 tons came from France and 245,380 tons from Luxemburg. The total production of raw steel amounted to 1,029,600 tons, against 927,010 tons in 1910. Belgium pig amounting to 854,030 tons and foreign pig amounting to 193,830 tons were utilized by the steel works. The total production of finished steel products manufactured by the steel works proper was 607,350 tons, and that manufactured by the works producing both steel and iron was 174,650 tons. There were 20 blast furnaces in active operation in 1911, against 17 in 1910 and 16 in 1909. The total production of pig iron was 853,480 tons, an increase of 98,590 tons over the output in the preceding year.

TABLE I.—*Cogging Mills.*

No.	Name of Company.	Type of Cogging Mill.	Particulars of Engine.							Rolls.					Work being done.	Ingots.		Number of Passes.	Time taken to Roll (measured).	Final Section.	Average Reduction per Pass.	Output.	Mills which are Supplied.	Remarks.
			Type.	Size of Cylinders.	Speed.	Steam.		Average Power.	Maximum Power.	Diameter.	Length of Barrel.	Lift.	Method of Lifting.	Grooving.		Measurement.	Weight.							
						Pressure.	Consumption.																	
1	Lackawanna Steel Co.	Rev. 2-high	2-cylinder reversing	1372 diam. 1676 strike	80	9·6–11·6	...	H.P. 5300	H.P. 6000	Mm. 1016	Mm. 2000	600	Hydraulic	...	Cogging for billets and timbars	Mm. 483×584	Tons ...	17	Seconds 110	178×178	Per Cent. 13	Tons Yearly 300,000	Continuous billet and timbar mills	
2	Carnegie Steel Co., Duquesne	,,	Twin-tandem compound	1118 } diam. 1778 } 1524 strike	150	9·5	24·5 kg. per ton	2400	10,000	1016	1828	...	,,	5 grooves 647–111 mm. circle	Billets 152×102 Slabs 102×102	431×508 470×546	3·1	21 19	140	152×102 102×102	17	,, 360,000	Continuous billet mill	Cast steel rolls.
3	,,	,,	2-cylinder reversing	1066 diam. 1524 strike	150 max.	9·5	24·5 kg. per ton	2400 built for	8000 20,000 !	965	1392	...	,,	3 grooves 508–203 mm. circle	Always only 184×216	470×550 at bottom 431×508 at top 470×546	3·1	13	75	184×216	16	,, 780,000	710 mm.	...
4	,,	,, high	Single cylinder Corliss	1162 diam. 1676 strike	65 min	9·5	16·4	1200	2200	710	1943	...	...	7 grooves/ 191–102 mm. circle	128×128 or 102×102	216×184	0·94 to 1·5	5 7	70	128×128 102×102	16·5 17·5	,, 780,000	583 mm., timbar mill; 356 mm., continuous mill	...
5	Carnegie Steel Co., Homestead	2-high	Single cylinder gear drive	711 diam. 1220 strike 22 : 42	100	8·75	...	...	...	710	...	...	Hydraulic	...	102×102 to 381×381	457×508 ×1800	2·9	,,	...	,,	,,	600 tons per 24 hours	...	...
6	,,	,,	2-cylinder reversing	1270 diam. 1828 strike	50	9·0	...	6800	...	965	...	...	,,	...	102×102 to 783×783	457×508 ×1800	2·9	...	...	...	...	800 tons per 24 hours	...	...
7	,,	3-high (cogging)	Single cylinder	1168 diam. 1524 strike	50	8·4	20	1100	...	840	...	...	...	...	127×152	457×508 ×1800	2·9	19	,,	127×753	8·8	715 tons per 24 hours	...	...
8	,,	2-high	2-cylinder reversing	1067 diam. 1524 strike	100	8·75	...	4500	...	1016	1750	...	Electric	...	102×102	635×762 ×1880	5·9	...	...	...	...	Billets 890 tons Slabs 925 tons	...	...
9	Carnegie Steel Co., Edgar Thomson Works	3-high	Compound with flywheel	1270 } diam. 1980 } 1524 strike	50	9·5	9·6	1400	3000	1016	1905	...	...	4 grooves	Cogging for heavy rail mill	432×470 at bottom 470×495 at top ×1900	2·2	7	40	241×241	17	3700 in 24 hours	Rail mill 1	Ingot 445×470 at top, 470×495 at bottom×1600 in 7 passes to 225×235×6410. 18 per cent. reduction.
10	Carnegie Steel Co., Ohio Works, Youngstown	,,	Flywheel, 100 tons	1320 } diam. 2285 } 1524 strike	55	9·5	9·6	2620	5100	1092	2438	...	...	5 grooves	Cogging for billets and rails	Various	2·3	9	45	204×204	17	3500 in 24 hours	595 double two-high for rails and billets, and 380 mm. for a continuous billet mill	Ingot 445×495 at top, 495×545 at bottom×1525 in 9 passes to 203×203×9150. 18 per cent. reduction.
11	,,	2-high	Twin-tandem	1143 } diam. 2134 } 1524 strike	max. 200	9·8	...	...	...	1016	2032	813	Electric	7 grooves	102×102	457×508	2·5	18	150	102×102	17	...	...	Spindle, 6·7 m. long.
12	Jones & Laughlin Steel Co., Pittsburg	3-high	Flywheel engine	...	...	...	...	...	...	1016	...	...	...	...	Cogging for continuous billet mill	...	...	...	...	...	...	...	Continuous billet mill and section mill	...
13	Jones & Laughlin Steel Co., Aliquippa	2-high	Twin-tandem compound	1118 } diam. 1778 } 1524 strike	150 max.	9·5	15·0	5500	10,500	1016	2286	...	Hydraulic	5 groove	Various	Various	3·1 to 8	23 to 50	150 to 340	163×163	8·3	About 1000 in 24 hours	Continuous billet mill	Piston speed, 460 m. per min.
14	National Tube Co., McKeesport	,,	Direct coupled reversing engine	1270 diam. 1524 strike	...	...	...	...	...	840	2300	...	Electric	6 grooves 690 mm.–100 mm.	,,	585×585	1·5–1·8	14–15	115	100×178	19	1910, 210,000 ; could roll more	...	...
15	Bethlehem Steel Co.	,,	Double-tandem compound	1016 } diam. 1674 } 1372 strike	50 to 125	11·5		4000	10,000	1016	2440	1018	,,	...	Cogging for rail and section mill	Various	2·6 to 8	15	75	203×203	11	23,400 per month	Rail and section mills	...
16	,,	Cogging Mill for Grey Mill (see Section Mill No. 7).				...	...	...	...	...	...	...	,,	...	...	...	...	...	...	...	...	...	...	...
17	Indiana Steel Co., Gary	(4) 2-high (1) 3-high	2 Cogging Mills for Rail and Billet Mills.																					
18	Illinois Steel Co.	3-high	Flywheel engine	869 } diam. 1524 } 1675 strike	66	8·8	8 to 9	2200	3000	1016	2300	...	...	5 grooves 410×450 to 208×208	203×208	457×483	2·0	9	40	203×208	17 (max. 22·5)	...	Rail mill No. 1	...
19	,,	2-high	Twin-revers engine	1397 diam. 1524 strike	100 max.	9·8	20·5	1200	4000	1016	1620	355	Electric	6 grooves 560×570 to 102×102	305×380 to 100×100 for section mill	559×610	4·3	17	145	216×229	10 (max. 20)	360,000 per annum	Section mill No. 1	...
20	American Steel and Wire Co., Newburgh Works	,,	Reversing engine	1195 diam. 1830 strike	...	...	...	...	...	965	...	...	...	...	178×203	460×510	2·5	12	...	178×203	17	About 1000 per 24 hours	585 three-high billet mill	...
21	American Sheet and Tinplate Co., Vandergrift	,,	Reversing engine	...	80	...	...	4000	...	965	...	...	...	4 grooves	Cogging for continuous timbar mill	460×510	3·5	14	180 (140)	102×203	16·5	...	...	...
22	Youngstown Sheet & Tube Co.	,,	Twin-reversing	1370 diam. 1680 strike	150	...	...	...	...	840	2030	...	Electric	Three grooves barrel in middle	Cogging for billets-timbar slabs 120×190 to 760	510×510 or 305×760	2·5	13	...	127×178	17	2000 in 24 hours	Continuous billet mill; 2 timbar mills	...

TABLE I—DETAILS OF DESIGN AND METHOD OF OPERATION OF COGGING MILLS IN AMERICAN ROLLING MILLS

Rolling Mill Practice in the United States[1]

An Interesting Comparison of Methods Pursued in German and American Works—How to Improve the Quality of Rails

By J Puppe

The development of the iron industry of North America, which has achieved as remarkable a record of progress in the last decade as in the preceding one, and the improved methods of working, especially in respect to rolling mill practice, still form an object lesson of paramount interest to European iron manufacturers. Early in 1911 it was the author's privilege to visit the majority of the plants in the United States where typical American rolling mill practice is followed, for the purpose of studying the latest methods and improvements. Among the works visited are the following:

Lackawanna Steel Co., Buffalo; the works of the Carnegie Steel Co., at Duquesne and Homestead, the Edgar Thomson works, and the Ohio Works at Youngstown; Jones & Laughlin Steel Co., Pittsburgh; National Tube Co.'s works at McKeesport and Ellwood; Bethlehem Steel Co., South Bethlehem, Pa.; Indiana Steel Co., Gary, Ind.; Illinois Steel Co., Chicago, several works of the American Steel & Wire Co.; American Sheet and Tinplate Co.'s works at Vandergrift, Pa.; Youngstown Sheet & Tube Co., Youngstown, O.

The various types of rolling mills are summarized in tabular form, with notes on their leading features having special reference to certain peculiarities which are less familiar to European conditions. In Table I features of the cogging mills in the leading American plants are summarized.

Cogging Mills

During the '90s cogging mills in the United States were almost exclusively constructed on the 3-high system, but since the introduction of the 4-inch billet the 2-high reversing mill has been practically universally adopted. The 3-high mill was brought to a remarkable state of perfection by John and George Fritz, and there are still a number of such mills at work, especially where one section only, or at all events a very limited number of sections, is rolled continuously. In rolling 4-inch billets, however, the great length of the pieces made it impracticable to use the 3-high mill, as the lifting tables could not be made sufficiently long to accommodate them, and the 2-high reversing mill had to take its place.

German Practice

In contradistinction to German practice, where the cogging mill forms the link between the steel works and the mills for all sections down to 4 inches square and less, also for slabs and flats, in the United States it forms an integral part of a particular rolling mill train, and performs the roughing down to a certain section only. Typical instances of this practice may be seen at Lackawanna and at Gary. At the Lackawanna works the cogging rolls serve for roughing down the ingots for the billet mill, whereas the heavy rail mill has several stands of cogging rolls for that mill alone. At Gary, where the cogging rolls for the rail and billet mills consist of separate 2-high sets followed by a 3-high set, the arrangement has been planned not only with the object of getting the largest possible output, but has also been determined by the method chosen for driving the trains. In very rare instances the cogging mill supplies the plate mill with slabs, the practice at the works of the Youngstown Sheet & Tube Co. affording such an example. In all other mills visited where slabs are rolled, a type of rolling mill entirely unknown to the author has been developed, namely, the slabbing mill, which may be described as a universal slab and roughing mill.

The cogging rolls are generally of quite small diameter, the pitch circle of the pinions measuring as a rule 35 to 40 or 42 inches, the roll diameter being about 3 to 5 inches smaller. Latterly, a 34-inch diameter has become the standard for such mills. On this account the roll length is much shorter than in Europe, generally not exceeding 6 feet, 6 inches, as compared with 9 feet, 4 inches in German mills. The arrangement of grooves also is different, the first groove not being at the side, but in the center, and consisting of the smooth surface of the roll, which is kept at its full diameter at that part.

The production of sections varying greatly in size is attained by giving a very high adjustment, in some cases three times as great as in European practice, where 40 inches is about the maximum. The same pressure can be applied to the rolls, while owing to the small diameter less power is required for driving. The wobbler connecting the upper roll with the pinion must be of a length corresponding to the increased height of rise, and in some instances it was found to measure 22 feet, and in another 17 feet, long. With such mills remarkably high outputs can be obtained. For instance, the cogging mill at Lackawanna turns out 500 tons in a single shift, the 40-inch mill at Duquesne averages 600 tons per shift and the 38-inch mill at the same works can turn out 1,300 tons per shift. These quantities, of course, fluctuate considerably, but the facility with which such large outputs are obtained is explained by the fact that the ingots are not rolled to anything like the same length as in Europe, the elongation being generally five to six times, and at most seven times. The rolling period is consequently much shorter. On timing the operations at random, the author noted that nine passes were made in 40 seconds and again in 47 seconds, seven passes in 41 to 48 seconds, and on other occasions the times were remarkably short. In the matter of rapid passes the 3-high mills show great superiority, as might be expected.

Large Reductions

Another striking difference between German and American practice is the rate of diminution of the draft of cogging rolls. Whereas in Germany a reduction of 14 per cent is hardly ever exceeded, and with harder material an average of 11 to 12 per cent reduction is the rule, the reduction in the draft from one groove to the next often amounts to 20 per cent in American practice. The roughing rolls of the rail mill at Lackawanna even give an average reduction of 24 per cent per pass in the

[1]Presented before the Iron and Steel Institute.

TABLE II.—*Billet and Tinbar Mills.*

Reference No.	Name of Company.	Type of Mill.	No. of Housings.	Drive. Type.	Drive. Cylinder Dimensions.	Drive. Speed.	Drive. Volts.	Drive. Average Power.	Drive. Maximum Power.	Diameter of Rolls.	Work Done. Billets.	Work Done. Tinbars.	Section at Commencement.	No. of Passes.	Total Time taken to Roll. Secs.	Average Reduction taken per Pass. Billets.	Per Cent.	Tinbars.	Per Cent.	Output.	Remarks.
1	Lackawanna Steel Co.	Continuous tinbar and billet mill	10	Compound engine with flywheel	1220 / 2132 diam. 1527 strike	66	...	4000	...	457	32×44 to 203×203	203 width	178×178	10	140	...	...	203×12	23	70 to 80 tons per hour	Speed stand No. 1, 11 r.p.m. " " " 10, 90 "
2	Carnegie Steel Co., Duquesne, supplied by 1016 mm. 3-high cogging	Continuous billet mill	10	Horizontal and vertical engine	1118 / 1975 diam. 1524 strike	75	Steam consumption 10 kg. per H.P. hour	1800	3600	356	76×76 to 38×38	...	152×102	10	220-'45	38×38	22	...	...	About 360,000 tons per annum	Speed stand No. 1, 20 r.p.m. " " " 10, 130 "
3	Carnegie Steel Co., Duquesne, supplied by 965 mm. cogging	Not continuous	3 / 3	Tandem compound	864 / 1774 diam. 1524 strike	80 / 83	Steam consumption 13 to 21·5 kg. per H.P. hour	1776 / 1855	3219 / 3106	535	Tinbars and fish-plate	...	127×127	6	85	...	...	216×9·5	29	March 1911 65,000 tons	965 2-high cogging; 710 2-high; 535 mm.; 356 mm. Rails were previously rolled
4	Carnegie Steel Co., Duquesne, supplied by 965 mm. cogging, 710 mm. cogging, and 535 mm. mill	Continuous billet mill	8	Tandem compound	1069 / 1880 diam. 1524 strike	78	Steam consumption 21·0 kg. per H.P. hour	1500	3555	356	51×51 to 32×32	...	102×102	8	110	32×32	25	...	...		
5	Carnegie Steel Co., Ohio Works, supplied by the 1092 mm. cogging mill	Double / Two-high / Three-high / Continuous	5 / 3 / 3 / 8	Flywheel engine	...	72-80 / 68-70 / 70 / ...	... / .. / .. / ...	2000 / 1500 / 1500 / 2500	... / ... / ... / 5000	580 / 580 / 580 / 380	Previously rails but now billets up to 38×38 / Billets 38×38	... / ...	203×203 / 102×102	7-11 / 8	... / ...	... / 38×38	... / 22	... / ...	... / ...	Total 3500 tons per 24 hours	1092 2-high cogging; 580 mm. double 2-high; 380 mm. 3-high; 380 mm. continuous mill; 38×38
6	Jones & Laughlin Steel Co., Aliquippa	Continuous billet mill	4	Steam-engine with flywheel	...	...	...	...	...	535	102×102	...	165×165	4	...	102×102	26	...	...	...	From cogging mills 1016 mm. Nos. 12 and 13, Plate I.
7	Jones & Laughlin Steel Co., Aliquippa	Continuous billet mill	6	Steam-engine with flywheel	...	...	...	...	...	405 / 455	45×45	...	102×102	6	...	45×45	24	...	...	...	
8	Indiana Steel Co., Gary	Continuous billet mill	2	Three-phase induction motors	Number 1	214	6600	2000	...	1016	Roughing to 286×368	...	Ingot 508×610, 3·6 tons	2	...	286×368	23	Total reduction from ingot to billet measuring 44×44 mm. 21·5 per cent.		...	No reheating
			2		1	214	6600	2000	...					2						...	
			5		1	83·5	6600	6000	...	812	Roughing to 178×178	...	286×368	2-5	...	178×178	21			...	
			6		1	83·5	6600	6000	...	609	Billets 165×165 to 102×102 Flats 114×178, 102×152, 99×140	...	...	6	...	...	...			300 tons per hour	
			6		1	83·5	6600	6000	...	457	Billets 89, 76, 57, 51, 44 mm. sq.	...	...	6	...	...	...			150 tons per hour	
9	Indiana Steel Co., Gary	Continuous tinbar	8	Three-phase induction motor	1	83·5	6600	6000	...	457	...	203×6·3 ×38	190×112 from the 609 mm. mill	8	...	...	...	203×6·3	29·6	50,000 tons per month	Flying shears
10	American Steel and Wire Co., Newburgh	Three-high billet mill	1	Steam-engine with flywheel	Cylinder dimensions. 865 / 1065 diam. 1400 strike	...	...	...	...	585	102×102	...	178×203	7	...	102×102	16	....	.	500 tons in ten hours	585 mm. three-high mill; 965 mm. 2-high cogging ref. No. 23
11	American Sheet and Tinplate Co., Vandergrift	Continuous tinbar	3 / 3	2 steam-engines with flywheels	...	60-70	...	1600	...	410		203×15 ×26,000	39×200 ×10,000	6	...	...	...	205×15 ×26,000	15 max. 35	18,200 per month	965 mm. 2-high cogging
12	Youngstown Sheet and Tube Co.	Continuous billet mill	10	Compound engine with flywheel	1220 / 2130 diam. 1524 strike	...	...	...	...	460	102×102 to 44×44	...	120×180	10	...	44×44	21·5	...	...	...	Billets
13	Youngstown Sheet and Tube Co.	Continuous tinbar mill	8	Compound engine with flywheel	1220 / 2130 diam. 1524 strike	...	...	...	...	460	...	Tinbars and strip 200 to 380 wide	Various	8	...	...	...	...	...	...	Tinbars; 840 mm. 2-high cogging

TABLE II—DETAILS OF DESIGN AND METHODS OF OPERATION OF BILLET AND TIN BAR MILLS IN AMERICAN STEEL WORKS

first six passes. How far the structure and quality of the material suffer in the case of rails is a question which will be discussed later. The final section of the piece after passing the cogging rolls is, of course, larger than in German practice, and varies generally from 6 to 8 inches square.

The shortness of the rolling period is further accounted for by the manner of controlling the auxiliary engines, which now very generally consist of electric motors. The controllers are operated with very short levers with short ranges, and there are only three notches, stop, forward and backward, with no intermediate steps.

The rolling down operation is largely performed in the same way as in Germany, the piece being continually turned over, the section retaining its square form. Here and there, however, an entirely different practice is followed. For instance, on the 35-inch mill of the National Tube Co., the ingot is rolled out flat in nine passes through the widest groove to a thickness of 4 inches. It is then turned on edge and put through the 4-inch groove, then two passes are again made through the 12 - inch groove, one pass through the 5-inch groove, and finally one through the 7-inch groove. On account of its great width, after the first nine passes it must be guided into the next groove and held with hydraulically-operated guides. This method has been introduced at one mill in Germany, but it has considerable disadvantages; first, the difficulty of putting the wide piece through the rolls on edge, and, secondly, there is a tendency to crack at the corners, due to the material being subjected for a considerable period in one direction to the roll pressure.

Summarizing all these facts, it appears that American cogging mills differ considerably from German types, both in point of construction and design and also in the method of operation, but that the high rate of production is chiefly rendered possible by the very much simpler plan of rolling, which consists in rolling to larger sections, thus shortening the rolling period, and by the rapid and accurate handling of the auxiliary engines.

The ingots are almost always heated in soaking pits which can take several ingots at one time. This is usual, partly on account of the cheapness of fuel, and partly because the service of the mills, being almost entirely automatic, the ingots must be of a uniform temperature throughout.

The difficulty of preparing pieces of a suitable initial section is in proportion to the lightness of the finished product. The use of a section rolled from a large ingot, as represented by the billet, dates, in America, from 1880. At first billets with a section of 4 x 4 inches were produced in the roughing rolls, and this practice led to the abandonment of 3-high mills in favor of the 2-high reversing type, on account of the unsuitability of the lifting tables for dealing with pieces of great length. Later the practice was further developed by the rolling of billets of a still smaller section, partly with a view of relieving the roughing rolls and partly for the purpose of lightening the work of the finishing rolls; also, it was an advantage to roll down to as small a section as possible before reheating the billet, which in any case was necessary before sending it to the finishing mill. The economy of having a set of rolls intermediate between the roughing rolls and finishing mill is apparent where there is a large market as in America, provided it is technically possible to construct a mill capable of taking the whole production of the roughing rolls and rolling it down in the same heat. It would be economically possible to roll 4-inch billets in the roughing rolls, but since these are designed for definite sections of large size their whole object would be lost if it were attempted to roll billets of any size under 4 inches square.

Rolling in One Heat

It is noteworthy that at first the attempt was made to roll from as large a section as possible direct down to the finished shape in one heat, and the introduction of the 4-inch billet marked a great advance, as compared with the 1½-inch billet, in the production of which two heats were required. Latterly, the tendency is to revert to the billet of small section, the weight being kept up by making them very long. The Morgan mills, which work up 1½-inch billets, 30 feet long, are now in great favor.

The semi-products of the roughing rolls, however, generally average about 6 to 8 inches square, and, for the production of small profiles and wire rods, these are rolled down into billets varying from 4 to 1½ inches square, for which, and also for flat bars, continuous billet and bar mills of eight to ten stands are almost always provided. Where the output is too small to make it worth while to install a billet mill, the ingot is rolled down further in the roughing rolls, as in the 2-high reversing mill of the Grand Crossing Tack Co., Chicago, where 1¾-inch square billets are rolled in the roughing rolls. To expedite the work, however, the piece after being reduced to 4 inches square, is sent back over the roll without reversing, the engine meantime running away.

The only non-continuous billet mill No. 10 in Table II, is the 3-high stand with 23-inch rolls of the American Steel & Wire Co., at Cleveland, which rolls down pieces 7 x 8 inches into 4-inch billets in seven passes. Also the billet and bar mills of the Carnegie Steel Co., at Duquesne and Youngstown, are not continuous mills in the usual sense, but are converted rail mills, which, however, are suitable for the production of large semi-products. A set of continuous rolls has been added in which billets of the smallest section can be rolled.

The billet and bar mill at Duquesne takes the material coming from the 38-inch, 2-high mill in front and from the 28-inch, 3-high mill, and rolls it down simultaneously into bars and billets or into fish plates and billets, the method being as follows: The first piece, after one pass through the 21-inch, 3-high billet mill, is cut straight into billets. The second piece, after one pass in the first stand, is also cut into billets, which each receive one pass in the second stand and are then taken direct to the continuous mill where they are rolled down into thin billets. The third piece is also cut up after one pass through the first stand, the resulting billets being then each passed once through the five following stands, and finished into fish plates or bars.

The converted rail mill at Youngstown is also suitable for rolling billets, since its construction as a double 2-high reversing mill gives it great adaptability to cope with the large output of the 43-inch, 3-high roughing rolls. The production of this whole mill amounts to 3,500 tons in 24 hours. The appliance for pushing the billets sideways is ingenious. The pusher works very rapidly, and in returning is lifted clear so as to allow the next billet to run under it.

The roll diameter in the continuous mills is comparatively small, being seldom above 18 inches and in some mills not more than 14 inches. Considerably less power is required, but this is more than compensated for by the losses in the trains of gearing. The small diameter entails a short length of roll, with only few grooves, which makes possible the use of very high pressures with safety. The average reduction of draft in continuous mills is always above 20 per cent whereas the average reduction in the 23-inch 3-high mill of the

TABLE III.—*Rail Mills.*

Reference Number.	Name of Company.	Type of Mill.	Number of Housings.	Drive. Type.	Drive. Number of Motors or Engines.	Drive. Cylinder Dimensions.	Drive. Speed.	Drive. Power.	Diameter of Rolls.	Finished Section, Kg. per Metre.	Section at Commencement. Millimetres.	Number of Passes.	Average Reduction per Pass. Weight of Rail.	Average Reduction per Pass. Per Cent.	Output.	Remarks.
1	Lackawanna Steel Co., Rail Mill No. 1.	Two-high and Three-high.	6	Reversing Steam-engines.	3 2	1016×1524 1218×1371	Stands I. and II. one engine. ,, III. and IV. one engine. ,, V. and VI. one engine.		813	39·7-49·6	470×470	15	39·7	22	2000 tons in 24 hours.	Two-high reversing mill. I. II. III. Two-high mill. VI. IV. V. Three-high mill. Three-high mill.
2	Lackawanna Steel Co., Rail Mill No. 2.	Three-high.	2	Steam-engine with flywheel.	2	1118×1219	70		610	6-32	Various.	12	Various.	...	70,000 tons per annum.	Three-high mill. Three-high mill.
3	Carnegie Steel Co., Edgar Thomson Works, Rail Mill No. 1.	Three-high. Two-high.	1 1 1	Steam-engines with flywheels.	1 1 1	1168×1525 1372×1676 762×1220	80 80 70	5000 H.P. 5000 H.P. ...	715 715 655	32·2-49·6	241×241	7 38 seconds. 5 50 seconds. 1	39·7	17	3696 tons per 24 hours as a maximum.	Rolling on the Kennedy-Morrison System. 750 mm. Three-high mill. 715 mm. Three-high mill. 655 mm. Two-high mill.
4	Edgar Thomson Works, Rail Mill No. 2.	Three-high.	3	Steam-engine with flywheel.	1	...	...	...	...	19·84-32·2	Ingots.	...	...	...	...	No information.
5	Edgar Thomson Works, Rail Mill No. 3.	Three-high. Three-high and Two-high.	2 of each.	Direct current compound motor.	1 1	230-250 volts, 30 poles. 56·8 ton flywheel.	100-125	Each 1500 H.P., light load, current 1200 1800 amps.	460	5·95-17·36	102×102 or 65×65	5 3	5·95 gross. 65×65	20	350 tons in 12 hours.	Three-high mill. Two-high mill. Three-high mill. Three-high mill.
6	Bethlehem Steel Co.	Two-high reversing. Three-high.	1 2	Twin tandem engine. Compound engine.	1 1	813/1421×1270 1117/1930×1524	... ...	.. ..	710	Rails and structural sections.	198×198	5 5+1	39·7	18	...	Three-high mill. Three-high mill. Two-high mill.
7	Indiana Steel Co.	Two-high cogging.	2	Three-phase induction motors.	1	...	214	2000	1067	...	Ingots.	2	Total reduction for rails weighing 39·7 kg. per m. in 28 passes, 20 per cent.		4000 tons in 24 hours as a maximum.	No reheating type. Three-high mill. Three-high mill.
	Gery.	Two-high cogging.	2		1	...	214	2000	1016	...	508×610	2				
		Three-high cogging.	1		1	...	75	6000	1016	...	...	5				
		Roughing and Two-high No. 4, S.	3		1	...	83	6000	711			3+2	...		...	...
		Two-high No. 1.	1		1	...	68	2000				1	...		...	...
		Two-high Nos. 2, 3, 6.	3		1	...	83	6000		...	...	3	...		...	...
8	Illinois Steel Co.,	Three-high.	2	Steam-engine with flywheel.	1	1372×1676	70	3500 H.P. (built for 5000 H.P.)	690	29·8-49·6	203×203	9	29·8 kg. 39·7 kg.	23 21	780,000 tons per annum.	1016 mm. Three-high cogging mill. Three-high mill.
	Rail Mill No. 1.	Three-high.	2		1	1118×1676	70-80	2500 H.P.	690	...	...	Ingot 495×560. 18 passes.		20		
9	Illinois Steel Co., Rail Mill No. 2.	Three-high. Three-high.	2 1	Three-phase motor, 2200 volts, 25 cycles.	2 2	1=24 poles, 1=12 ,, 1=24 ,, 1=12 ,,	120 and 80	1200 600 1200 600	585	Up to 42·2	203×203	3+2 2	39·7	26	80,000 tons per annum.	Three-high mill.

TABLE III—DETAILS OF DESIGN AND METHODS OF OPERATION OF RAIL MILL

American Steel & Wire Co. is only about 16 per cent. The drafting is usually designed with the aim of reducing to a minimum or avoiding altogether the turning and up-siding of the piece between two stands.

The drafting for rolling bars is almost always designed to avoid upsiding. All the grooves are flat, and by the selection of a correct initial section the desired width is obtained in the final closed pass, sometimes also by the use of vertical rolls behind the last stand. The two last passes of the bars are in such cases made through smooth rolls. The output of the continuous billet and bar mills corresponds to that of the roughing mill in front. At Gary, the production is 300 tons per hour of 4-inch billets and 150 tons of 1¾-inch billets. At Lackawanna the output is 70 to 80 tons per hour, but even that would be an unusual achievement in Germany.

Rolling Time

These results are obtained by driving the last stand at a comparatively high speed, 90 to 200 revolutions per minute, the first stand running at 9 to 12 revolutions. On timing the speed of working, the author found that the time from the entering of the roughed-down ingot between the rolls of the first stand and the entering of it at the last stand was 30 seconds and the rolling time of a whole ingot of 2½ tons was 2 1/3 minutes. At the billet mill of the Ohio works the piece went through from the first to the last stand in 28 seconds, the last pair of rolls being 15 inches diameter, and running at a speed of 200 revolutions per minute. The smallest billet section is 1¼ inches, and 8 inches is the uniform width for bars.

It is the almost invariable practice to cut both billets and bars with electrically-operated flying shears. They are cut into pieces of definite length, and conveyed away at once by the live rollers behind the shears. The cooling proceeds in much the same way as in English plants. At the American Sheet & Tin Plate Co.'s works, however, a cooling drum is installed, measuring 95 feet long and 8 feet, 6 inches in diameter. This apparatus revolves very slowly and lifts the bars from the roller table of the shears and deposits them on the hot bed roller table, the bars cooling down all the time that they are being slowly carried round on the drum. Data covering the design, construction and operation of billet and tin bar mills in the United States are contained in Table II.

The rapid growth of population in the United States was accompanied by an enormous development of railway enterprise, and for some years after 1865 the supply could with difficulty keep pace with the demand. In 1878 there were 11 works at which rails were rolled, the yearly output being 34,000 tons. In 1880 the number of works was the same but the production had increased to 800,000 tons. At the present time there are 14 rail mills in the United States, with a yearly output of about 3,000,000 tons. As the rate of production increased the cost naturally diminished, the greatest economy being due to labor saving. The cost of labor per ton fell from about $3.20 at the end of the '80s to $1.65 in recent years.

It is of interest to study the question of rails in connection with the increase in production. When a single rail mill, such as that at the Edgar Thomson works or at Gary, turns out from 3,500 to 4,000 tons in 24 hours, it is a question whether that amount of care is bestowed on the work which is desirable in view of the great importance of obtaining the requisite high quality in the finished rails. This supposition would seem to some extent to be confirmed by the fact that rail breakages on American railways are of much more frequent occurrence than in Europe, notwithstanding that for a long time various commissions of rail manufacturers and consumers have been investigating the causes of this trouble, and have endeavored, by various means, to improve the quality.

Increase in Loads

It must be admitted that the conditions of railway service in the United States are far more severe than in England, and that the loads and speeds have been very much increased since the '80s. The carrying capacity of the railways has increased five times and the speeds have been nearly doubled, while the weight of rail has not been increased in proportion. The loads of freight cars has been increased from 10 to 50 tons, and the weight conveyed by a freight train has gone up from 500 to 600 tons to 3,000 to 4,000 tons. The axle-load of freight locomotives is now 25 tons as compared with 11.5 tons formerly. Speeds of 75 miles per hour have to be maintained daily between stops in order to make an average speed of 50 miles per hour. From these considerations it will be seen that the risk of breakages must have increased considerably, especially in view of the low temperatures sometimes prevailing during the winter months.

Proposals for the improvement of the structure of the metal by lowering the temperature at which the rails were finished and a specified permissible maximum contraction, have not proved a sufficient remedy in increasing the resistance to shock and jar.

Lately a thorough inspection has been maintained at the rail mills by the authorities of 15 railway systems, with upwards of 90,000 miles of track, and throughout the day and night shifts the work in the steel works, at the roughing mills, the rail mills, and testing machines is supervised by an engineer in each department.

Question of Rail Breakages

The question as to whether the number of rail breakages are due to inferior quality resulting from the rapid production on large scale, in conjunction with the acid Bessemer process which has long held the field, or are to be attributed to the severe conditions of service, is a question which at all events is not yet solved. The fact is noteworthy, however, that the production of rails of special steel is now continually on the increase in the United States, and there has of late been a considerable decline in the output of acid Bessemer rails. In 1911 the production of Bessemer rails was only 1,156,852 tons as compared with 1,948,586 tons in 1910, or a reduction of 40 per cent. On the other hand, the production of open-hearth rails in 1909 was 121 per cent greater than in the preceding year, in 1909, 1,276,056 tons, and in 1908, 576,381 tons. In the same manner the production of special steel rails rose from 51,313 tons to 203,831 tons, or about 300 per cent between 1909 and 1910, and the production of titanium steel rails increased from 36,250 to 198,535 tons, or by 440 per cent. During 1908-1911, that is, three years after the first trials with titanium steel rails, 400,000 tons of such rails altogether have been laid at different times; the rails were rolled at the Lackawanna Steel Co.'s works.

Naturally, the treatment during rolling has a particularly important influence on the rail quality. The initial and final temperatures, the cross-section and length of ingot, the proportion of initial and final section to the number of passes, the roll-drafting and the treatment of the finished rails, all play an important part. One would suppose that in the

course of years a certain standard might have been adopted which would form a basis of comparison, and would permit conclusions to be drawn as to the quality of the finished product. The temperature would of course be the first subject of observation.

The whole rolling operation, at least as far as regards temperature, might be better controlled if the specification required that the rail, after the final pass, should have a temperature corresponding to a definite longitudinal contraction, namely, for a 30-foot rail of 100 pounds per yard a contraction should be allowed of 6½ inches, and 1/16 inch less for each 5 pounds reduction of weight. Such rules would, however, only have some value if other points in connection with the construction of the rolling mill itself were taken into consideration. But the conditions of rail rolling in the various American rolling mills differ so much, especially as regards the points which influence the final temperature, such as initial and final section, number of passes, and the relation of these to one another, that even an approximate basis of comparison is impossible, and consequently any such rules would be absolutely useless.

Discard

To standardize the amount of discard is beside the mark, not only on account of the many conditions which influence segregation, but because every ingot requires individual treatment according to the depth of the pipe, which must at all costs be cut out. If the conditions of manufacture permit that the price may be increased according to the percentage of discard, this may have the effect of a premium for the steel works which took no interest in the improvement of its ingots or in the reduction of pipe. In German practice the elimination of piping is practicable, and can be perfectly performed; the end surfaces are milled, thus allowing any defects to become visible. Such defects are not revealed by an ordinary saw-cut alone, as practiced in the United States.

It is clear, however, that it cannot be immaterial whether a comparatively hard material is rolled down to its final shape in 30 passes with a reduction of 12 per cent in section at each pass, or in 15 passes with a 23 per cent reduction. The finishing temperature is bound to be enormously influenced by the number of passes and the reduction of draft, thus proving the uselessness of taking the contraction as a guide for the finishing temperature; moreover, the structure of the steel, especially at the lower temperature required in the case of the harder kinds, suffers through the too severe squeezing of the metal.

The comparative figures given in Table IV for the American and German rail-rolling mills show a much greater uniformity in favor of the latter, which entirely confirms the foregoing considerations. The German figures, in addition, show a smaller average reduction of draft for the roughing passes and all the succeeding passes.

Table IV.

COMPARISON OF RAIL ROLLING PRACTICED IN THE UNITED STATES AND GERMANY.

United States.

No. taken from Table III.	Weight of rail.	Average reduction per pass, roughing rolls.	Total number of passes.	Average total reduction per pass.
	Kilogrammes.	Per cent.		Per cent
1	39.7	24	15	22
3	39.7	20	19	19
6	39.7	..	..	..
7	39.7	21	18	20
8	39.7	19	18	20
9	39.7	19	16	22
A	36.3	..	30	13
B	36.3	..	27	14
C	38.5	..	18	19
F	38.5	..	29	13
G	38.5	..	18	19
H	36.3	..	15	23
I	43.8	..	24	15
J	34.0	..	26	15
L	38.5	..	24	16
M	27.2	..	22	18
Average	....	20	21	18

Germany.

Works.	Weight of rail.	Average reduction per pass, roughing rolls.	Total number of passes.	Average total reduction per pass.
	Kilogrammes.	Per cent.		Per cent.
A	41.0	9	28	14
B	33.4	10	31	13
C	45.9	13	24	15
D	33.8	13	24	15
E	41.0	12	24	15
F	33.4	12	24	15
G	45.9	12	24	14
H	41.0	11	33	12
I	33.4	11	30	13
J	33.4	11	28	13
K	20.0	11	30	13
L	30.0	13	22	15
Average	....	12	27	14

Data Covering Nine Rail Mills

The nine rolling mills summarized in Table III show in their construction and arrangement that the requirements for a high production are fulfilled by dividing up the whole mill into a series of subsidiary trains, each of which is independently driven. This subdivision led to the wide adoption of 3-high stands, which developed further into non-reversing 2-high stands in which one pass only is made. In this connection appears also the contrast with German and English conditions, where the reversible 2-high mill is still preferred, and of necessity, because the mills are not built with the sole object of rolling rails, but have to deal with a much wider range of material, and the capacity reached by subdividing the mills could not be fully utilized under the market conditions of Germany and England.

The disadvantages experienced in a large plant built for making a special class of material, in not being able to utilize its full capacity, may be realized from the fact that the Gary works in 1911 turned out 286,492 tons of rails, or 10 per cent of the whole rail production of the United States, and in the previous year 443,000 tons, or 12 per cent, were manufactured. But the capacity of the Gary works is about 1,200,000 tons yearly, so that in 1910 the output was 37 per cent and in 1911 only 24 per cent of the total capacity. Assuming

that 500 shifts were worked, the production per shift for 1910 was about 880 tons, and for 1911 about 570 tons, which, though large, is but a small proportion of the maximum capacity of 2,000 tons, and might have been attained with much simpler appliances in an ordinary German rail mill.

The number of stands varies according to the whole layout of the rolling mills and to the initial section of the ingot, and as the number of passes made in one stand is reduced the length of roll and diameter diminish. The variations in the diameter are shown in Table III.

A simple subdivision of the mill into two or three 3-high stands, or two 3-high stands and a 2-high behind one another as commonly practiced in Germany, enables continuous rolling to be carried on to a certain extent, and makes an increase in output possible, provided that by exact automatic working, as at the rail mill No. 1 of the Edgar Thomson works, several pieces can be rolled simultaneously.

Concerning the rail mill of the Gary works, it is scarcely necessary to describe this plant. With regard to the draft, however, it may be mentioned that the ingot section is 20 x 24 inches, and it is rough-rolled in nine passes to about 8 x 8 inches, and finished in nine more passes without reheating. The average reduction of draft in the first nine roughing passes is 21 per cent, which must be regarded as very high; in Germany roughing mills 15 to 17 passes would be required for this work. It should be noted that the two first roughing stands only run at six revolutions per minute, and the third and fourth stands at ten revolutions per minute. The shape of the grooves indicates the tendency to reach the finished profile as soon as possible, and the reductions of section are very considerable.

The rails are cut to length by several saws operated together, by means of which a sufficient degree of accuracy is reached without the necessity of milling. By the omission of milling a great economy is obtained. The only machining operations to be performed after rolling and cutting to length are the straightening and drilling of the rails. Presses are used for straightening, and the roll straightening machine is rarely seen, though in common use in Germany. The drilling machines are generally fitted with three spindles. Fig. 1 shows the arrangement of the Lackawanna Steel Co.'s straightening plant.

Rating Reversing Engines By Cylinder Sizes

Several large builders of rolling mill reversing engines are now rating these machines solely by their cylinder sizes. Mackintosh-Hemphill & Co., Pittsburgh, recently completed a 44-inch and 70 x 60-inch twin-tandem compound reversing engine, and the Mesta Machine Co. has just finished building a 46-inch and 76 x 60-inch twin-tandem, compound reversing engine, rated entirely in this way. The Mesta Machine Co. is building an additional engine of the same size as noted for the Indiana Steel Co., Gary, Ind. Occasionally, rolling mill reversing engines are rated by horsepower and the 55 x 60-inch machine, which has been the standard in American mills for many years, with full steam admission, would develop over 25,000-horsepower at a speed of 250 revolutions per minute. It is claimed, however, by several engine builders that this rating is misleading, as the engine operates with full steam admission only at low and medium speeds. When running at high speed, it operates with greatly reduced steam admission, so that the horsepower developed by the 25,000 horsepower engine never exceeds 6,000. Recently a test was made on a blooming mill engine at one of the mills in the Pittsburgh district. It was found that the horsepower developed in the early passes was about 4,000, which was increased to slightly less than 5,500 and during the last passes it again was reduced to about 4,000-horsepower, notwithstanding the greatly increased speed.

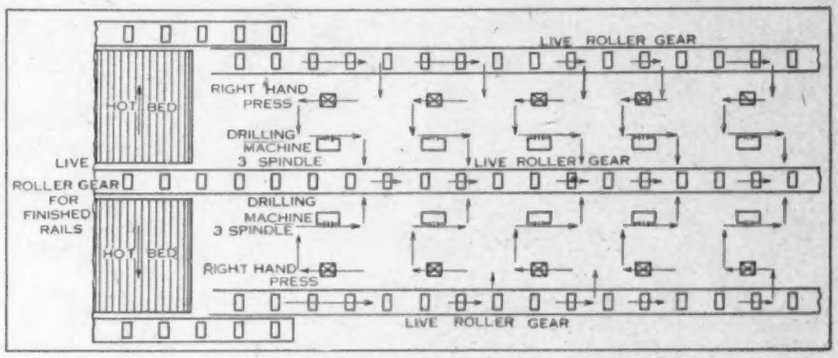


FIG. 1—PLAN OF THE LACKAWANNA STEEL CO.'S RAIL STRAIGHTENING PLANTS IN THE UNITED STATES

A Highly Refractory Cement

Until recently, fire clay has been used almost exclusively for building brick walls, cementing joints, patching and lining furnaces, kilns, retorts, etc., where high temperatures are encountered. The fire clay generally is mixed with a binder. The H. W. Johns-Manville Co., New York City, now is manufacturing a new high temperature cement which, it is claimed, can be used to good advantage where working temperatures range from 1,500 to 3,100 degrees Fahr. This material is in the form of a dry powder, consisting of asbestos and other ingredients. It is mixed with water to the proper consistency in the proportion of 18 to 20 pounds of water to 100 pounds of powder for use as a mortar or for tamping around molds. When air-dried, this cement will withstand a crushing strain of 883.5 pounds per square inch. It vitrifies at the comparatively low temperature of 1,480 degrees Fahr. and its melting point is 3,182 degrees Fahr. Being semi-acid in character, it can be used with chrome, silica or fire clay brick.

Additional deposits of iron ore have been discovered in Norway, Sweden and Finland, and surveys and exploration are proceeding in several places. In Finland it is said that deposits of considerable magnitude have been found and some at least are high grade ore. The exploitation of these deposits, which exploration engineers claim rival, in size, the largest in the world, will necessitate the building of about 100 miles of railroad, and the erection of an extensive crushing and concentrating plant. For this work the people of Finland will welcome the formation of a foreign company having sufficient financial strength to undertake such a project, as there is little hope of its being done by domestic capital.

Heroult type electric furnaces, the American rights to which are owned by the United States Steel Corporation, are being operated by the Crucible Steel Co. of America, the Firth-Sterling Steel Co., the American Steel Foundries and the Noble Electric Steel Co.

A Converter Design Which Facilitates Repairs

Description of a Two-Piece Converter Which May Be Repaired Each Day Without Discontinuing Operations

Since the perfection of small converters for the manufacture of light and intricate steel castings, such as are used in the automobile and allied trades, it has been found that, owing to the high temperature at which the metal has to be poured, the wear on the lining is severe. It is impossible to obtain the maximum output and to operate continuously every day without having to shut down for repairs. The cost of repairs is high, being enhanced by the idleness of the vessel during the cooling period. Many attempts have been made to reduce this cooling time. One method involved blowing cold air into the converter for a period of about four hours after the last blow. Another method, which is practiced extensively, involved making repairs once each week, blowing continuously on one lining without patching. This is not satisfactory, however, because after each day's blow the converter lining is badly worn. As a result, the interior of the vessel becomes larger, loses its shape, and the tuyeres are burned away to an irregular line. With each succeeding heat the lining continues to be burned away still further and toward the end of the week the blows are irregular and the metal is cold and dirty. This has been one of the principal difficulties involved in the use of the converter for the manufacture of steel castings.

When the converter is finally shut down for repairs, from 12 to 24 hours are required for cooling. While repairs are being made the converter is idle and the output of the foundry is proportionately reduced. In general practice, to produce steel every day, it has been found necessary to employ two converters, which are operated alternately, one being repaired while the other one is blowing.

To overcome this difficulty, A. F. S. Blackwood, vice president of the Michigan Steel Casting Co., Detroit, has designed a two-piece converter, which has eliminated this period of inactivity for repairs and has rendered the operation continuous. This converter requires no mechanism for effecting the separation of the parts other than an overhead or jib crane.

The greatest wear on the lining of a side-blow converter is on a plane immediately above the tuyeres, and with this point in view, the converter is separated through this plane, which is situated slightly above the trunnions. The bottom half carries the trunnions, which are cast with the ring that encircles the bottom half of the converter shell; the top of this is the dividing line of the two parts and carries the top part of converter; these are bolted together and are riveted to the shell. On the ring immediately over the wind box is bolted a heavy steel plate which prevents the slag and metal from clogging up the swing door on the wind box while blowing, and to this plate is attached a swinging cast iron frame which carries the oil burners, the latter fitting into the tuyeres for heating the converter before blowing. On the top flange of the ring are six shackles which swing through slots. When the top is lowered in place, these shackles swing into slots in brackets on top of the lower half of the vessel and a key is driven through the hole in the head of each shackle, firmly securing both parts together. On the top half of the converter are four eye brackets through which are passed the chain hooks for lifting and lowering it. There are also two trunnions bolted on this part in line with the trunnions on the bottom half, so that when the top half is being cooled or repaired, it may be set on a special frame. This frame having two journals, allows this top part to be swung around in any position convenient for repairing.

Immediately after the last blow, the crane hooks are placed in the eye brackets, the top lifted off and the top part placed on the frame for cooling. Not

FIG. 1—RAMMING NEW GANISTER IN TOP CONVERTER SECTION

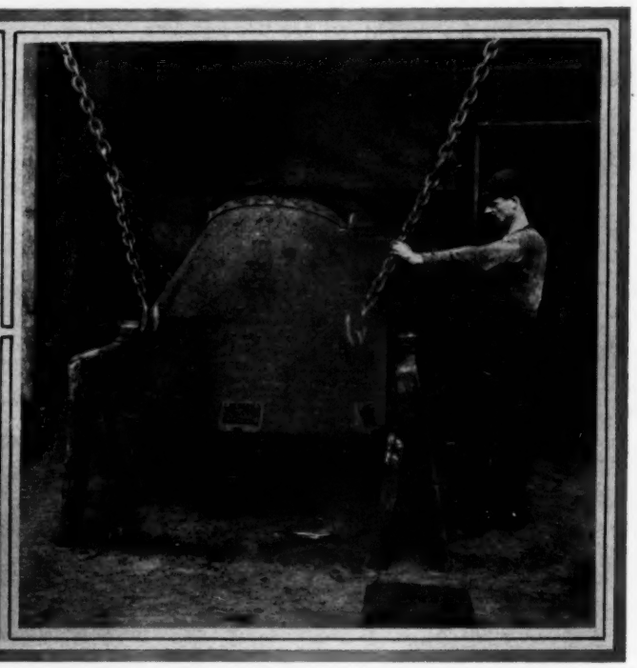


FIG. 2—AUXILIARY TRUNNIONS SUPPORTING TOP SECTION

FIG. 3—REPAIRING LOWER SECTION
FIG. 5—PLACING TOP HALF ON LOWER

FIG. 4—PUTTING IN MATERIAL FOR JOINT
FIG. 6—SECURING SH ACKLES IN SLOTS

more than two hours need elapse before repairs may be made, as the hotter the lining is when being patched the better it will resist high temperatures.

When the top has been removed, the bottom half is brought into a horizontal position and the condition of the tuyeres and lining observed, enabling the attendant to ascertain the condition of the converter only a few minutes after the last blow. As the converter is repaired every morning, the dimension lines are kept well defined and no forms, boards or special plates need be used, nor is it necessary to put in new tuyeres, as they are rammed up to the proper length each day. The lining in the bottom section is carried to within 1 inch of the joint line, leaving a space which is filled with refractory material for making the joint.

When repairs are completed, the top half is lifted by a crane, swung to position and lowered upon the bottom half; the shackles on the lower half being guided into the slots in the brackets on the upper half. The keys are then tightened and the converter turned through an angle of 75 degrees and fired up. The total time required for repairing, closing and heating is about three hours. Further details are shown in the illustrations. In Fig. 1, the top section of the lining is being repaired and it can be plainly seen where the new ganister has been rammed in, thus showing the wear on the dividing line. Fig. 3 shows repairs being made to the lower section and also gives an idea of the accessibility of the tuyeres. Fig. 4 shows a workman placing the special refractory material with which the joint between the two sections is made. The lining of this section of the furnace is left down about 1 inch from the joint line and the joint cement filled in. Figs. 2, 5 and 6 show the method of replacing the upper half on the lower half and of securing the two sections with wedges driven into slotted holes. Fig. 2 also shows the use of auxiliary trunnions, with which the upper half is provided.

The Michigan Steel Casting Co. has had two of these converters of one ton capacity each in continuous operation for over two years and has obtained an average output of 12 tons per day apiece without a day being lost for repairs. The average time for blowing one ton is 11 minutes with the air going into converter at atmospheric temperature. The steel is poured direct from the converter into small hand ladles and by the aid of a special core placed in the mouth of the converter, slag is prevented from mixing with the metal entering the ladle.

This converter is built by the Tropenas Converter Co., New York City, which has acquired the rights for its manufacture in the United States.

Losses in Steel Works Operations[1]

By Percy Longmuir and W H Robinson

Although the full results of these studies cannot be given, a summary of them will probably prove of interest. For this purpose, a complete working year has been selected and the results obtained week by week, from the more typical departments, are given.

The yield of a process is here taken as including all metallic products. Scrap, that is, runners and defectives, are differentiated later. The yield figure obtained is calculated from the metallic portion of the charge; thus, in the case of the open-hearth steel, ore and scale are not counted as portions of the metallic charge. The data from this source, when averaged, give the following results:

WEEKLY YIELD AND LOSS PER CENT AS AVERAGED FROM THE YEAR'S WORKING

Type of steel.	Yield, per cent.	Loss, per cent.
Bessemer	88.81	11.19
Open-hearth basic	95.35	4.65
Open-hearth acid	96.24	3.76
Crucible	98.81	1.19

Higher yields than these have been published. However, it should be noted that the author's records do not represent selected runs, but the whole of a year's working, and they therefore give all varieties of conditions as regards plant and its operation.

An analysis of the metallic product includes defective steel and scrap produced in the steel-making operations. The weekly average of defective steel and scrap, for a period of one year, follows:

Type of steel.	Defective, per cent.	Scrap, per cent.
Bessemer	0.26	4.06
Open-hearth basic	0.24	1.65
Open-hearth acid	0.14	2.37
Crucible	0.52	14.93

Defective and scrap are self-evident terms. Certain fluctuations were shown in the weekly returns, but it should be noted that the volume of scrap is very largely determined by the type of ingot and the method of casting, conditions subject to variation according to the type of work in hand.

After actual steel-making, the first selective process is that of reduction from ingot into billet, bloom, or rail, and it is here that the effects of cropping-off piped portions, short lengths, etc., are felt. Weekly results of this character are really not complete unless the analyses of the steels are included, for the amount of pipe is to some extent a function of the carbon contents of the steel. It has not been possible to include these, and it can only be stated in general terms that the range varies from 0.10 to 1.45 per cent, with a good average of about 0.80 per cent carbon. The weekly average of the rail and billet mill operation for the year ending December, 1911, follows:

Type of steel.	Good, per cent.	Defective rolling, per cent.	Scrap, per cent.	Loss, per cent.
Bessemer	78.63	0.16	18.01	3.20
Open-hearth basic	79.63	0.03	17.28	3.06
Open-hearth acid	77.20	0.08	19.84	2.88

The following table contains the weekly average for one year of the bar mill operations:

Type of steel.	Good, per cent.	Defective rolling, per cent.	Scrap, per cent.	Loss, per cent.
Bessemer	94.28	....	1.97	3.75
Open-hearth basic	95.05	0.01	0.89	4.05
Open-hearth acid.	93.55	0.01	2.62	3.82
Crucible	93.68	0.08	2.71	3.53

The bar mill product is of a varied character, and includes a large proportion of hot rolled strip steel.

The greater stringency of conditions on a rod mill is exemplified in the following table of weekly averages:

Type of steel.	Good, per cent.	Defective rolling, per cent.	Scrap, per cent.	Loss, per cent.
Bessemer	90.25	2.21	3.38	4.16
Open-hearth basic	89.98	2.95	2.84	4.23
Open-hearth acid.	90.68	2.74	2.66	3.92
Crucible	92.53	0.79	2.96	3.72

Turning to an entirely different type of product, namely, tires and axles, the conditions differ as regards scrap in that greater allowances have to be made.

Type of steel.	Good, per cent.	Defective rolling, per cent.	Scrap, per cent.	Loss, per cent.
Bessemer	81.71	0.01	14.82	3.46
Open-hearth acid.	84.42	0.18	11.94	3.46

The results of axle-forging follow:

Type of steel.	Good, per cent.	Defective rolling, per cent.	Scrap, per cent.	Loss, per cent.
Bessemer	86.23	....	10.14	3.63
Open-hearth acid.	85.78	0.19	10.68	3.35

The collection of data of this kind forms a very considerable help to the management in the way of production and cost of accounting.

[1]Presented at the annual meeting of the Iron and Steel Institute.

CONTINENTAL IRON AND STEEL MARKETS

BELGIAN IRON TRADE

Brussels, Jan. 9.—The Belgian market is well maintained and there is no effort made to improve prices. The New Year holidays have as usual had a disquieting effect on the market. The local prices were 16.50 francs ($3.13½) for steel bars; 17 francs ($3.23) for iron bars; 16.50 francs ($3.13½) for girders; 17.75 francs ($3.37) to 18 francs ($3.42) for rods and 18 francs ($3.42) to 18.25 francs ($3.47) for heavy steel plates; and 19 francs ($3.61) for homogeneous. There is a good foreign demand and square blooms of 4 inches and more side are quoted £5 3s ($25.07) and £5 4s ($25.31), f. o. b. Antwerp, with a slight addition for 3-inch and 2-inch side respectively. The local prices are 127 francs ($24.13) for square blooms of 120 millimeters side.

The number of furnaces in blast in Belgium on Jan. 1 was 49 out of a total of 55 in existence. This compares with 44 on Jan. 1, 1912. Locally they are situate 22 in the Hainault and Brabant regions, 21 at Liege and six at Luxemburg. The Belgian production of cast iron last year was 2,344,910 tons, against 2,106,120 tons in the preceding year.

FRENCH IRON TRADE

Paris, Jan. 9.—Your correspondent hears that the well-known French armament company, Schneider, Creusot, along with the steel company, the Societe des Hauts Fourneaux et Forges d'Allevard, are about to erect a large plant in Pontcharra (Isere department), for the electrolytic production of steel. It is stated that the electric furnaces employed will be amongst the largest yet laid down. It is intended to erect a hydro-electric station for the generation of power.

In France, the production of iron ore has been very considerable, and indicates, of course, the well-known metallurgical activity of the year 1912. On the other hand, the iron ore of Anjou, which was once thought little of, is now being sent regularly to Germany and England. Prices between 1911 and 1912, for various factors in the metallurgical industry, are given as follows: Coke, 1912, 24.35 francs ($4.62), 1911, 21.47 francs ($4.08); coal, 20.901 francs ($3.97), 1912, 17.50 francs ($3.32), 1911; Luxemburg cast iron No. 3, 89 francs ($16.91), and 70 francs ($15.01). A step of considerable importance was taken last year in the decision to bring the directors of the principal iron metallurgical works into communication with the directors of the railways twice a year. This has facilitated the object so dear to the heart of many Frenchmen, namely, the retention of railway orders in the country, the distribution of some of which abroad from time to time has invariably evoked severe criticism.

GERMAN IRON TRADE

Berlin, Jan. 9.

The Luxemburg government and the local iron and steel men have not yet reached any agreement in regard to the 686 hectares of iron ore land, for which concessions still remain to be granted in the Rumelange-Esch and Differdange districts. It has been decided to invite new tenders, and it is expected that the price of 1,230 francs ($233.70) per hectare previously asked will be exceeded. Considerable improvements are now in progress or in contemplation at the Eisch works of the Burbach-Eisch-Dudelange Co., which controls a yearly production of over 960,000 tons of pig iron (representing about 60 per cent of the total output of Luxemburg), nearly 900,000 tons of steel and about 5,100 tons of electrical steel (the last being produced at the Dommeldange works). The new installations include two large blast furnaces designed for a daily output of 200 tons each, Thomas steel works, with a yearly output of 400,000 tons, and a large rolling mill. The new steel works are expected to start operations during the second half of this year.

As a partial compensation for the loss sustained by the manufacturers of the Grand Duchy owing to the rejection of the scheme for the canalization of the Moselle, the Prussian government proposes to grant important reduction in the railway rates for iron ore and coke between the Rohr district and the Luxemburg district. On the basis of the tonnage carried in 1910, it is estimated that a total gain of nearly 4,900,000 marks ($1,151,500) will result to the Lorraine and Luxemburg districts, as against 12,000,000 marks ($2,820,000) the figure which is estimated to represent the advantages that will have accrued to the steel and iron industry from the canalizing of the Moselle.

The year 1912 has been the record crude iron year for Germany, the total having been 17,850,000 tons or 14¾ per cent better than in 1911. It amounts to 48,911 tons per day against 42,560 tons in 1911. In the month of October, the daily production was 51,267 tons, whilst during the last two months, November-December, it stood over 50,000 tons. This enormous production for Germany was very quickly taken up by the metallurgical works.

The metal market in Germany is very sensitive to the prospects for and against peace; and recently the tendency which had been towards peace had rather eased the situation, particularly as the world's demand continues to be a good one. December was a good month for the industry; but the period has passed now and a comparison of the prices at the beginning of 1913 and 1912 as quoted on the Dusseldorf exchange will serve to indicate better than anything else the progress that has been made during the year and the practically present-day position. Spiegel iron, 10 to 12 per cent manganese, 82 marks ($19.27), in 1913, compared with 72 marks ($16.92), in 1912; puddled iron 69 marks ($16.21½), and 62 marks ($14.57); German Bessemer cast, 81.50 marks ($19.15½), and 74.50 marks ($17.50); German hematite, 81.50 ($19.15½) and 74.50 marks ($17.50); common steel bars, 123-126 marks ($28.90½-$29.61) and 110-115 marks ($25.85-$27.02½); common iron bars, 145-148 marks ($34.07½-$34.78) and 132-135 marks ($31.02-$31.72½); steel sheets, 145-150 marks ($34.07½-$34.25) and 132.50-137.50 ($31.13½-$32.31); common steel plates, 132-135 ($31.02-$31.72½) and 130-132 marks ($30.55-$31.02); steel boiler plates, 142-145 marks ($33.37-$34.07½) and 140-142 ($32.90-$33.37); fine plates, 142.50-147.50 ($33.48½-$34.03) and 140-145 marks ($32.90-$34.07); for rolled steel wire, 127.50 and 122.50 marks ($29.96-$28.78½) all in prices for the opening days of 1913 and 1912.

MINING NEWS FROM THE IRON RANGES

New Cogebic Property

M. A. Hanna & Co. have a promising exploration on the Gogebic range, in Section 18, 47-45, south and east of Bessemer and between that city and the village of Wakefield. The use of drills in testing the tract has been attended with such favorable results that preparations are being made to sink a shaft to better ascertain the extent of the deposit that has been located. Apparently the field is well worthy of exploration. Not only have Hanna & Co. encountered ore, but the presence of mineral in nearby lands has been determined, in one instance as the result of sinking a well.

Winter Shipments

Stockpiles on the Marquette range are growing rapidly. In common with those of the other Lake Superior districts, the mining men expect the shipments the coming season to run well ahead of last year's record-breaking outgo. There is ample room at all of the properties to take care of the winter's production, less ore than usual having been left in stock at the close of navigation last fall. Shipments are being made to furnaces this winter as is customary. The Hartford mine of the Republic Iron & Steel Co. is shipping to the Lake Superior Iron & Chemical Co.'s furnaces at Newberry and Manistique; the American mine of M. A. Hanna & Co. is forwarding daily consignments to the Algoma Steel Co., at Sault Ste. Marie, Ont., and the Cleveland-Cliffs Iron Co. is shipping to its own furnaces at Gladstone and Marquette, as well as to the Newberry and Antrim furnaces.

New Tonnage Tax Bills

The usual tonnage tax bill has made its appearance in the Minnesota legislature. The measure is practically the same as the one that passed in both houses during the administration of the late Governor John Johnson, who vetoed it. A bill of similar kind is due to bob up in the Michigan legislature, as at various times before. A new feature of the Michigan bill, however, will be a section providing for a rebate of the tax on all minerals manufactured within the confines of the state. There are prospects of extensive litigation, if the bill should be enacted.

Record Expected

Oglebay, Norton & Co.'s Bristol mine at Crystal Falls, Menominee range, is expected to make a record output this year. With a new shaft, 1,000 feet in depth and excellently equipped, the property is in position to excel all past achievements. It is hardly expected that M. A. Hanna & Co.'s Carpenter mine will be added to the shipping list this year. Development work is little more than started. The Hanna firm's Ravenna property will not ship heavily, since the underground openings are still of small extent, but eventually this mine will be one of the largest producers of the Crystal Falls district. Corrigan, McKinney & Co.'s Tobin mine is being operated vigorously this winter. The Dunn also is putting considerable ore in stock. At the Armenia, a third member of the group, a new shaft is being sunk 150 feet east of the present working shaft. It will be put down to the fifth level. The shaft is designed both for ventilation and for the purpose of winning the ore in the pillars and elsewhere about No. 1 shaft when the mine is "robbed". Corrigan, McKinney & Co.'s Great Western mine continues idle and with a big pile of ore in stock. No shipments were made last season. Neither was any ore forwarded from the Oliver Iron Mining Co.'s Mansfield mine, although the property was continued in commission and is still being operated on a small scale. The future of the Mansfield, so far as the present regime is concerned, depends upon the outcome of negotiations for the extension of the lease to the tract, which is owned in fee by John E. Peters, of Detroit, and associates. The lease expires within a few years. No exploratory work has been done for months. Whether new deposits can be found to take the place of the depleted ground is a question. The Mansfield has the distinction of producing the only Bessemer ore mined in the district. Pickands, Mather & Co.'s Hemlock property at Amasa—the "Old Reliable", as the miners call it—is being worked on its usual steady scale. An interesting report from this mine is that an additional body of ore has been cut in a diamond drill hole put down from the bottom level

Fire at Florence Mine

The destruction of engine house No. 1 by fire has put the Florence Iron Co.'s mine at the village of Florence, on the Menominee range, temporarily out of operation. The plant had been in service for years. Its principal duties were to furnish compressed air for the underground drills and to operate the man hoist, all ore hoisting being done from engine house No. 7, at the newer end of the mine. The loss is covered by insurance. The fire has been the means of hastening the installation of new electrical machinery and it will not be long now before the various mechanical operations heretofore performed by steam will be performed by electricity transmitted from the new plant of the Peninsula Power Co., at Twin Falls, a dozen miles distant.

Wood Refuse Plant

A joint enterprise of the Cleveland-Cliffs Iron Co. and the Goodman Lumber Co., the newly erected works of the Cliffs Chemical Co., at Goodman, in northern Wisconsin, has gone into commission. The plant is operated in connection with a sawmill and produces charcoal, wood alcohol and acetate of lime. It is equipped with the retort system of wood distillation. The retorts are fired with the sawmill refuse. The charcoal will be shipped to the Cleveland-Cliffs company's furnace at Gladstone and the crude alcohol and acetate of lime to the Pioneer furnace and chemical plant at Marquette for further purification. By combining acetate of lime with sulphuric acid, which is made at Marquette from iron pyrites, acetic acid is produced.

Near Deerwood, Minn., work at the Adams mine is progressing rapidly. The shaft has been anchored to bed rock, and sinking in ore will soon be under way. The foundations for mine buildings are being built. It is said that as soon as the Adams shaft is completed, the Foundation Co., of New York, will commence work on the Crow Wing mine south of Oreland.

The Steel Corporation is to enlarge its hydraulic works at Quinnesec Falls, Menominee river, this winter.

SHOW GAIN

Iron and Steel Imports Heavy in November.

The value of all iron and steel exports was greater in November than in any month since May. There was a decrease in tonnage, but the total value of the exports showed an increase. The tonnage exports in November were

IRON AND STEEL IMPORTS, GROSS TONS.

	November, 1911.	November, 1912.	Eleven months, ending November, 1911.	Eleven months, ending November, 1912.
Scrap	146	3,668	16,622	20,900
Pig iron	8,346	14,318	134,664	117,263
Blooms, billets, steel n. e. s.	1,503	1,570	28,106	17,006
Wire rods	1,240	1,106	14,337	13,738
Rails	122	513	1,271*	3,585
Bar iron	1,943	2,279	25,122	23,506
Structural	196	364	1,352*	2,866
Sheets and plates	138	239	2,074	3,096
Tin plate	246	97	13,689	1,881
Totals	13,880	24,154	237,237	203,841

*Not stated prior to July 1, 1911.

233,341 gross tons. The value of all iron and steel exports, not including agricultural machinery, was $26,406,425.

While November iron and steel imports, 24,154 gross tons, fell slightly below the October total of 25,559 tons, they were large considering the average of the year, since in the preceding nine months the monthly average was only 14,000 tons. The gains were fairly well distributed, being naturally greatest in pig iron, including ferro-manganese, spiegeleisen, ferro-silicon, etc. What is classed at "pig iron" has this year been comprising 55 to 60 per cent of our total iron and steel imports. Tin plate imports have continued inconsequential, and were particularly small in November, 97 tons, against an average of 178 tons a month in the preceding ten months, 1,175 tons a month in 1911 and 5,550 tons a month in 1910.

IRON AND STEEL EXPORTS, GROSS TONS.

	November, 1911.	November, 1912.	Eleven months ending November, 1911.	Eleven months ending November, 1912.
Scrap	4,406	7,507	73,929	96,182
Pig iron	8,147	25,278	109,858	248,665
Billets, sheet bars, etc.	13,871	18,949	216,832	273,364
Wire rods	2,510	5,692	18,716	58,039
Rails	25,140	31,947	398,000	411,194
Steel bars	8,674	23,033	111,953	191,863
Iron bars	1,581	1,472	16,668	19,691
Structural	28,174	21,450	205,765	262,949
Hoop, band and scroll	589	1,186	2,932*	11,142
Sheets and plates	38,760	45,176	328,511	503,277
Tin plates	5,056	4,654	54,730	77,160
Barbed wire	13,879	8,521	88,741	89,290
All oth. wire	11,831	10,138	118,488	137,976
Cut nails	1,492	329	10,476	8,772
Wire nails	4,446	3,355	44,566	64,048
All other, including tacks	1,168	323	12,132	7,821
Pipes and fittings	17,422	20,658	180,897	231,517
Railroad spikes	†	1,120	†	†5,509
Bolts, nuts, rivets, washers	†	1,575	†	†8,396
Horse shoes	†	132	†	†408
Cast radiators	408	846	3,678	5,272
Totals	187,554	233,341	1,996,872	2,712,535

*Not stated prior to July 1, 1911.
†Not stated prior to July 1, 1912.

IRON ORE IMPORTS BY ORIGIN, 1912.

	November,	11 mths.
Spain	4,520	83,631
Sweden	16,724	315,796
Canada	5,008	95,714
Newfoundland and Labrador	12,100	124,585
Cuba	112,060	1,259,813
Other countries	12,605	25,055
Totals	163,017	1,904,594

IRON ORE IMPORTS, BY MONTHS.

	1909.	1910.	1911.	1912.
January	105,233	284,823	102,600	154,118
February	61,749	170,427	94,820	129,693
March	108,676	163,633	134,785	157,469
April	74,782	206,135	133,900	178,502
May	97,393	240,833	217,467	198,482
June	124,714	193,415	118,296	180,122
July	172,316	248,810	200,845	185,677
August	209,855	282,949	175,183	178,828
September	164,613	208,892	184,456	180,571
October	178,051	219,571	172,459	202,125
November	174,966	197,833	128,019	163,017
December	222,609	173,710	148,902	.....
Totals	1,694,957	2,591,031	1,811,732	1,904,594

Iron ore imports experienced quite a drop from October to November, but the November exports were not far from the average of the three preceding Novembers. Iron ore imports in the first 11 months of the past three years have been as follows, in gross tons:

IMPORTS BY MONTHS.

	1910.	1911.	1912.
January	56,207	33,071	20,008
February	43,613	20,812	11,622
March	54,176	23,533	15,466
April	47,698	22,392	12,482
May	42,569	23,347	15,955
June	30,322	29,399	21,407
July	41,933	15,782	17,916
August	36,879	19,944	20,572
September	30,961	14,039	18,740
October	31,455	21,035	25,559
November	40,585	13,880	24,154
December	31,575	19,665	.....
Totals	487,973	256,903	203,841

1910	2,417,321
1911	1,662,830
1912	1,904,594

Exports of iron ore in the same periods were as follows:

1910	638,578
1911	752,931
1912	1,186,831

EIDSON SENDS WIFE.

Who Receives Medal for Him.—Other Safety Society Awards.

Because he was too busy to be present, Thomas A. Edison sent his wife to receive in his behalf the award of the Rathenau gold medal from the American Museum of Safety at the annual meeting of the organization held at the Engineering Societies' building, Thursday evening, Jan. 23. Mr. Edison was engrossed at the time in perfecting his talking motion picture machine and he couldn't spare the time from his laboratory. The Rathenau medal, which was awarded for the first time in this country, was given to Mr. Edison for inventing the best device in the electrical industry for safeguarding industrial life and health. The achievement which gained the medal was a perfected storage battery light of the noted inventor. The *Scientific American* gold medal, given for the perfection of a life saving device, was presented to the Draeger Oxygen Apparatus Co. for the pulmotor. The Travelers' Insurance Co.'s gold medal for the American employer doing the most for the protection of its workers, was given to the New York Edison Co. The National Cash Register Co. received the Dr. Louis Livingston Seaman gold medal for progress and achievement in hygiene and sanitation and the lessening of occupational disease. Arthur Williams, president of the museum, announced that Mrs. Mary W. Harriman had established the E. H. Harriman gold medal to be awarded annually to the American steam railroad making the best record in accident prevention and industrial hygiene. Andrew Carnegie was present at the meeting and delivered an address.

Mr. Carnegie later presented the Museum of Safety $5,000. He said that before the meeting he had been "blissfully ignorant of the work being carried on by the American Museum of Safety."

VALUE OF IRON AND STEEL EXPORTS—TONNAGE AND NON-TONNAGE.

	1908.	1909.	1910.	1911.	1912.
January	$13,468,058	$10,329,388	$14,513,394	$18,738,391	$18,451,914
February	14,063,559	10,947,159	13,949,082	18,693,792	21,801,570
March	15,168,155	13,873,746	17,258,503	22,591,991	24,474,799
April	15,455,319	13,058,297	16,529,260	24,916,912	26,789,853
May	11,281,415	12,964,367	17,658,042	20,616,795	28,050,247
June	11,677,944	13,779,736	16,503,204	20,310,053	24,795,802
July	12,085,951	11,866,772	16,108,102	17,454,772	24,913,052
August	12,058,561	14,134,487	17,628,537	20,013,557	25,450,107
September	11,221,799	12,966,908	16,776,178	19,875,308	23,286,040
October	11,505,063	14,249,598	17,452,085	20,220,833	25,273,059
November	10,895,549	14,434,690	18,594,806	20,823,061	26,406,425
December	12,231,741	15,069,246	18,300,710	22,186,996	.....
Totals	$151,113,114	$157,674,394	$201,271,903	$249,656,411	$265,377,556

EXPORTS OF TONNAGE LINES—GROSS TONS.

	1908.	1909.	1910.	1911.	1912.
January	74,353	70,109	118,681	152,362	151,208
February	81,773	84,837	110,224	150,919	204,972
March	96,681	94,519	124,980	216,360	218,693
April	93,285	100,911	117,921	228,149	267,312
May	64,041	109,808	135,306	178,589	307,656
June	69,770	114,724	120,601	174,247	273,185
July	86,796	100,850	127,578	162,855	272,944
August	86,244	105,693	131,391	177,902	282,835
September	76,732	97,641	119,155	181,150	248,746
October	85,766	110,821	129,828	186,457	250,611
November	71,130	116,105	155,138	187,554	233,341
December	77,659	137,806	150,102	190,938	.....
Totals	964,242	1,243,567	1,540,895	2,187,809	2,712,535

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Concrete and Steel

Only a few years ago the steel trade was fearful lest the growing use of concrete would curtail the growth of the steel trade. Concrete seemed to be making important inroads, but it was soon observed that the advent of so desirable a material for certain purposes really served to stimulate industrial activity, and iron and steel came in for their share. Operations were undertaken which otherwise would not have been thought of, and when concrete was used, there was iron and steel consumption incident thereto.

A close estimate of Portland cement production in 1912 has just been made by the geological survey. The production figures for Portland cement and pig iron are as follows:

	Cement—Barrels.	Pig Iron—Gross Tons.
1900	8,482,020	13,789,242
1905	35,246,812	22,992,380
1906	46,463,424	25,307,191
1907	48,785,390	25,781,361
1908	51,072,612	15,936,018
1909	64,991,431	25,795,471
1910	76,549,951	27,303,567
1911	78,528,637	23,649,547
1912	82,000,000	29,700,000

Cement production made very rapid strides through 1909, and from 1906 to 1909 there was an increase of 40 per cent, whereas pig iron in that period did not measurably gain. Since 1909, however, cement has been gaining less rapidly in proportion to pig iron, the gain from 1909 to 1912 being 26 per cent for cement and 15 per cent for pig iron.

The feature of steel consumption at the present moment, in view of precedents, is the very heavy tonnage involved in uses other than those connected with large construction operations. Thus the railroad consumption runs chiefly to rails and rolling stock. In industrial lines the most rapid gains are being made in the use of steel in the form of sheets, among which may be mentioned metal furniture, automobiles and tin plate containers. Wire also has gained greatly. The light lines, formerly regarded largely as frills, are found to be real tonnage producers.

Two Schools of Business Men

The appearance on the stand in the Steel Corporation dissolution suit of William E. Corey, one of the two ex-presidents of the Steel Corporation, has attracted even more attention than the recent testimony of Theodore Roosevelt, the only living ex-president of the United States. This is due to the fact that Col. Roosevelt practically repeated what he had said on previous occasions, especially when he appeared as a witness before the Stanley committee of the House of Representatives, while Mr. Corey was a new witness and testified as to many matters about which the general public had little information, making statements which seemed directly to contradict statements made upon various occasions by officers of the Steel Corporation and other companies.

THE IRON TRADE REVIEW does not propose to pass upon the value of Mr. Corey's testimony. That value will be weighed by the court after all the evidence is submitted. We believe, however, that in considering the testimony it is fair to all to remember that Judge Gary and Mr. Corey belong to very different schools of business men. Mr. Corey is of the type of business men who believe in warlike methods. These men would like to see unrestrained competition, except when iron-clad agreements can be made, and they would enforce these agreements by heavy penalties. When agreements are not strictly adhered to, these men believe in unsparing slashing of prices, letting the weak ones fall where they may. Judge Gary, on the other hand, represents the type of men who have been under the belief that if, without violating the law, competition can be restrained by conferences of representatives of competing concerns, that course should be followed. Judge Gary is a diplomat rather than a fighter. He believes in the utmost consideration of those with whom he is competing. He would give every man a fair chance. But, it may be said, this does not explain why there is a direct contradiction in the testimony of Messrs. Corey and Gary as to whether price agreements were made in connection with the Gary dinners and subsequent meetings of committees. This apparent contradiction is, we believe, largely a question of the use of words, rather

than of actual facts. Judge Gary was of the opinion that if men could be brought together with the utmost frankness, telling each other freely their business secrets, especially as to prices, the mere knowledge of what one another intended to do or had been doing would have a restraining effect and tend to regulate prices. Now, whether this meeting of mind and mind, resulting in stability of prices, this action, which might almost be described as sub-conscious, is an understanding or an agreement, is perhaps a matter on which men may disagree. Mr. Corey says there were agreements connected into the Gary dinners, and Mr. Gary says there were not. Probably both are honest in making those statements. It is largely a matter of mental attitude and point of view.

One fact was brought out very clearly in the testimony of Mr. Corey. While examining Mr. Corey concerning so-called price agreements, Mr. Severance said:

"Is it not a fact that in everything you did you acted under the advice of a legal firm which had no connection with the regular Steel Corporation counsel?"

"Yes, it is a fact," replied Mr. Corey.

"And is it not a fact that this firm advised you in connection with all price announcements made by different individuals at the meetings or at the Gary dinners that there was nothing illegal about them so long as no agreements were made?"

"That is true," replied Mr. Corey.

Even as late as the Gary dinners there was a great deal of uncertainty as to the meaning of the Sherman law. In fact, there still is uncertainty, but, within the last two years, court decisions have done much toward enlightening business men as to what they may expect from the courts in the enforcement of the Sherman law. If, however, as Mr. Corey testifies, every step taken by him and other officers of the Steel Corporation in connection with price announcements was strictly in accordance with able legal advice, and if the general policy was one of fairness and consideration for all engaged in the trade, as the competitors of the Steel Corporation have often declared, we are unable to see that the country has reason for complaint.

Scrap Weakness and the Weather

What is the matter with the scrap market? is the remark that is frequently heard these days in the iron and steel trade. For several months, despite the fact that consumption of old material has continued at a heavy rate and other melting materials have been strong in tone, the scrap market has been weak and relatively listless. This condition with the easier condition in pig iron, during the past few weeks, manifestly has not been improved; in fact, today, as it has been for some time, scrap metal is about the weakest of the whole list of iron and steel materials. With consumption going on in the country at an unprecedented rate, it would appear that the recent weakness of old material is almost paradoxical. Normally, under such pressure of demand, values would be expected to be considerably higher. Intrinsically, likewise, it is appreciated by consumers that in comparison with pig iron prices, recent quotations of old material afford the opportunity for very attractive purchases. In the east with basic pig iron at $18.00, delivered, heavy melting steel is bringing but $14.50, delivered, and that with some difficulty. In Pittsburgh, the range between basic at $17.40, Pittsburgh, and heavy melting steel at $15.00 to $15.25, is similarly wide.

Weather conditions usually exercise a very important influence upon the old material market, since upon them depends largely the supply of material available at a given time. In the winter, when snow and freezing conditions make the collection of scrap, especially in the country districts, more difficult, it is usually expected that the supply will be correspondingly reduced and the movement of shipments be also slower. In the spring, with the breaking of the winter, the supplies and the movement of material are usually much heavier. The explanation, therefore, offered by many for the extraordinary conditions in the scrap market, is to be found in the remarkably open winter that has prevailed up to this time. That the present winter in its mildness is almost unprecedented, is illustrated by the statement that navigation on the Hudson river remains open at the latest date in fully one hundred years.

Likewise on the Great Lakes there is probably less ice than ever before, although, of course, there is no navigation during the winter.

Because of the favorable weather conditions, the collections and shipments of scrap have been going forward heavily and practically without interruption since the usually active fall months. Today the market appears to be suffering clearly from an over-supply of material at an unexpected time, as judged from the usual conditions of the past. There are, of course, other contributing factors to the present weakness. In the east, the broader use of duplexing by the steel works is undoubtedly an important factor in decreasing demand for scrap.

Present conditions give rise to an interesting speculation. If the usual congestion of scrap in the winter months has failed to appear up to date, due to the remarkable winter, will not the spring collections and offerings, which are usually very large as representing the accumulation over the winter, be correspondingly reduced and thus equalize what today is apparently an over-supplied market? This is the question to which many merchants and consumers are now giving careful consideration as a premise towards forming their judgments of the probable future course of the market.

Legal Advice Followed in Price Policies

Wm. E. Corey Testifies in Dissolution Suit

Former President of the Steel Corporation Gives Interesting Testimony---Tells About His Troubles With Judge Gary—Disagreed With Him on Many Policies and Was Overruled by Finance Committee—Roosevelt a Dictator as Well as a Witness

After a recess of one month, the opposing counsel in the suit of the government for the dissolution of the United States Steel Corporation resumed hearings in New York last week. But two witnesses, Ex-President Theodore Roosevelt and William Ellis Corey, former president of the Steel Corporation, were examined. Col. Roosevelt tramped over familiar ground, but Mr. Corey's testimony was the most interesting which has been introduced into the record since the suit was filed.

The hearing of Col. Roosevelt was characterized by dictatorial tactics on his part. He decided that he would be questioned in the privacy of his own office, that only those he designated should be present and that he would reply to questions exactly as he saw fit. He was questioned regarding the part he took in the purchase of the Tennessee Coal, Iron & Railroad Co.'s securities, in 1907, by the Steel Corporation. Emphasizing his remarks with frequent blows of his fist upon the table, he reiterated that nothing could alter his belief that he took the only sensible course of action when he gave his approval in 1907 to the taking over of the Tennessee company. He expressed without reserve his confidence in the infallibility of his judgment as exercised at that time.

Mr. Corey's testimony was replete with information which has never before been made public. He told about the operations of a world-wide armor-plate agreement and of a world-wide rail agreement. He said that the effect of the committees appointed at the so-called "Gary dinners" was practically the same as if price agreements had been reached, and that Judge Gary knew this. Judge Gary, he said, also knew of the existence of the various pools and agreements for many years prior to their disbanding about 1904. Previous witnesses have testified that Judge Gary did not know of the pools till just before they came to an end and that their disbanding was the direct result of his orders. Mr. Corey also said that the Tennessee company was in real competition with the Steel Corporation in the manufacture of steel rails prior to the latter part of 1907, and he believed it could have continued in competition indefinitely.

The government has not yet made a definite announcement as to when it will complete its hearings, but it is believed that only a few witnesses yet remain to be examined.

Col. Roosevelt's examination consumed in all about one and one-half hours. Judge Dickinson, who examined him for the government, opened the proceedings by asking Col. Roosevelt to identify the much discussed letter which he wrote to Attorney General Bonaparte on Nov. 4, 1907, in the presence of Judge E. H. Gary and Henry C. Frick, relative to the purchase by the Steel Corporation, of the property of the Tennessee Coal, Iron & Railroad Co. This letter stated, it will be recalled, that President Roosevelt had been informed by Messrs. Gary and Frick that there was a certain New York business firm of importance which would fail unless aid was forthcoming and that among its assets was a majority of the securities of the Tennessee company. The Steel Corporation was willing to take up these securities and thereby prevent a break in the strained financial condition that might be ruinous, although it would not care to purchase the stock, as a business proposition. Its representatives had consulted with the president, knowing that its action in purchasing the stock would be subject to criticism. President Roosevelt in the letter stated that he had informed Messrs. Frick and Gary that while he could not advise them to take the action proposed, he felt it was no public duty of his to interpose any objections. This letter has been widely published in the past. After putting the letter into evidence, the government turned the witness over to the defense.

Tells of Threatened Panic

"I call your attention," said Mr. Lindabury, of counsel for the defense, "to your testimony on the record of the Stanley committee, in which you said:

"'I had already heard from New York that certain of the big bankers were urging the Steel Corporation to acquire the Tennessee Coal & Iron properties so to save certain trust companies, which they mentioned, from disaster.' Do you remember giving that testimony?"

"I do," replied Col. Roosevelt.

"You further testified," continued Mr. Lindabury, "'I ought to say that from New York I had been told by banker after banker that the Tennessee Coal & Iron securities were valueless as securities that counted in that panic, and before Mr. Frick or Mr. Gary had said anything to me, they were expressing to me the earnest desire that the big institutions, or I will not say big,—the threatened institutions—should have substituted for the Tennessee Coal & Iron securities, other securities that would be of immediate value in stopping the panic. I do not give that as a statement of fact, but it is what was said to me by the bankers, and without contradiction by the bankers at the time.' Do you remember giving that testimony?"

"I remember giving that testimony," replied Col. Roosevelt.

There was then placed in the record a letter from Judge Gary to Secretary of State Root, dated Nov. 7, and other correspondence between President Roosevelt, Attorney General Bonaparte, Secretary Root, and Judge

Gary, following the interview at the White House.

Judge Dickinson, of government counsel, objected to these letters as being "irrelevant and incompetent" evidence.

"Did you testify before the Stanley committee that your statement to Messrs. Frick and Gary that you saw no reason why you should interfere was based upon the understanding that no other cause existed for prosecuting the Steel Corporation under the Sherman Act?" asked Mr. Lindabury.

"My memory is that I so testified," replied the colonel.

"You realized, did you not, that if you had informed Messrs. Frick and Gary that in your opinion the Steel Corporation was subject to prosecution or dissolution under the Sherman act, either because of its organization or its practices, they would not have gone on with the contemplated acquisition of the Tennessee Coal & Iron Co.?" asked Lindabury. The answer was in the affirmative.

Col. Roosevelt told of an investigation of the Steel Corporation by the bureau of corporations, under his direction, some years before.

"I cannot say the bureau reported to me anything about the Sherman anti-trust law," he said. "I do not remember whether they mentioned that or not. I remember perfectly that they reported to me about the Steel Corporation and the Standard Oil, and drew a very sharp distinction between them; and that they reported to me favorably about the Steel Corporation and unfavorably about the Standard Oil corporation, on the points which their investigation covered, but I do not recall in detail all the subject of either report."

The purport of this testimony was to show that Mr. Roosevelt, while president, through reports from Commissioner of Corporations Garfield, and other government officials, was quite familiar with the operations and policies of the Steel Corporation at the time of the visit of Messrs. Frick and Gary to the White House.

Col. Roosevelt testified that for a day or two prior to the visit of Messrs. Frick and Gary he was in hourly communication with New York and understood the gravity of the situation there.

"I will ask you, colonel, if the particular matter to which your mind was addressed at that time was not the condition of things in New York, and the relief that this supposed action would bring in New York?" asked Judge Dickinson.

"There were two matters to which my attention was especially directed," answered the former president. "One was the condition of things in New York, the relief that the action would bring, not merely to New York, but throughout the entire country—just as much in Louisiana and Minnesota and California as in New York. That was one thing. The other thing to which my attention was particularly directed was the percentage of holdings that the Steel Corporation had, and had had and would have after the Tennessee Coal & Iron properties were acquired."

"Were these the controlling and prominent features that operated on your mind in coming to the conclusion that you did?" was asked.

"These were the two chief matters that I had in my mind," was the reply.

The witness said he had no knowledge whatever of the existence of any pools among steel manufacturers by which prices were controlled, either at the time of the Tennessee deal or prior.

Tests Witness' Knowledge

"What character of information did you have at that time in regard to the formation and practices of the United States Steel Corporation or its subsidiaries; did you have anything further than the percentage of output?" asked the government council.

"I had no knowledge save as I had it from the bureau of corporations and save as there may have been comments made to me by the attorney general on the statements of the bureau of corporations," said the former president.

Colonel Roosevelt said he did not recall if he had ever known the extent of the iron ore and coal deposits, or the number of blast furnaces, etc., of the Tennessee company. He said he had only roughly informed himself of these holdings. Judge Dickinson asked him what knowledge he did have.

"The knowledge that I had was that the Steel Corporation had some years previously possessed nearly 60 per cent of the holdings of the steel industry in the country, that its percentage has shrunk steadily; that the addition of the Tennessee Coal & Iron Co., which was something in the nature of 4 per cent, somewhere between 2 and 4 per cent, I have forgotten the exact amount, somewhere around there, did not bring up the percentage of holdings of the Steel Corporation to what it had been

Corporations Will Not Give Up the Fight

Rumors which have been current in the financial and stock market circles of New York during the past week, that the United States Steel Corporation was considering or had decided to negotiate with the government for voluntary dissolution, have again been met with emphatic denials by Chairman Gary and other executive officials. "There is no foundation whatever to the published statement that the Steel Corporation is going to seek voluntary dissolution and that it will apply to the Supreme Court for direction how to go about it," says Judge Gary in an official statement. "The question has not been up for consideration by the board of directors or the finance committee or the officers of the Steel Corporation."

Judge Gary's statement harmonizes perfectly with the policy of the Steel Corporation announced shortly after the dissolution suit was filed, that it will vigorously combat the allegations of the government, in the confidence that its operations have not contravened the Sherman anti-trust act, and that it has scrupulously followed the law in all matters. The fresh outbreak at this time of the rumor has undoubtedly been due in large part to the testimony given by former President William E. Corey, which by common gossip is accepted to have been about the most unfavorable yet adduced against the Steel Corporation. The fact that Mr. Corey is still a director of the Corporation has given a peculiar significance to his testimony in the minds of some. Mr. Corey is serving his unexpired term as director, which he held at the time of his resignation as president. His term as director expires in April.

a few years previously." Colonel Roosevelt said that "it was impossible to take into account the potentialities that might or might not be developed." He further stated that when he talked about percentages of output, he meant "steel production", as he had considered steel output primarily. He also had considered only the output of iron ore, not the extent of the deposits.

"Did you know at that time that the Tennessee Coal, Iron & Railroad Co. was the largest holder of commercial iron ore in the United States outside of the Steel Corporation?" asked Judge Dickinson.

"No; I had heard it stated that it was a large holder of such ore, and wholly incompetent to develop it or do anything with it, and that the ore would not be developed and nothing would happen in connection with it if some company capable of developing it did not get hold of it," was the answer.

"From whom did you get that information?"

Property Almost Worthless

"I cannot tell you now. It is a matter of general statement among all those people most competent to judge at that time; I am not volunteering this; you asked me what I had heard," replied the colonel. "I did not know anything about it; I knew that its stock was regarded as so very poor, that the banks that had it did not regard themselves as strengthened by having it. My knowledge was simply this, that it was a matter of general opinion among experts that the Tennessee Coal & Iron people had a property which was almost worthless in their hands, nearly worthless to them, nearly worthless to the communities in which it was situated, and entirely worthless to any financial institution that had the securities the minute that any panic came, and that the only way to give value to it was to put it in the hands of people whose possession of it would be a guarantee that there was value to it."

"And your understanding, then, was that at that time it was in the hands of people who were financially weak and who were not able to develop it; is that so?" pursued the counsel for the government.

"My understanding was that the people had not developed it, and that there was nothing in the way the business had been carried on, or was then carried on, which gave any promise of such development, and that was not based on my opinion. It was based on the fact that the banks holding the securities which ought to have been capable of judging, had that information," was the reply of the colonel.

"And that was largely the basis of your conclusion, the attitude of the banks?" was asked.

"That was largely the basis of my conclusion. Let me also add this: That was in panic times when the men were giving the best judgment that they knew how to give, because the wrecking of business conditions throughout the country or the non-wrecking of them, depended upon the accuracy of their judgments, and it was a matter of life and death to them to give good judgment."

"Did you know that prior to this interview, somewhat prior thereto, but within a year, the United States Steel Corporation had certain experts to investigate this property and had received reports upon it?"

Refused to Become Excited

Mr. Corey appeared at the hearings with his private counsel, T. L. Chadbourne, but not once did he consult the latter. The former president of the United States Steel Corporation was plainly bored with the proceedings, despite the fact that the government considered him its star witness, and he yawned frequently, sometimes in the middle of a sentence. Occasionally he bit at the end of a long, black cigar. Only once during the three days that he occupied the stand did he lose his patience, and even then he refused to become excited. He quietly informed Frederick R. Kellogg, who was examining him regarding the Hill ore lease, that he would answer no more of his "ridiculous questions."

Regarding the Hill ore lease, Mr. Corey stated that he had always opposed it on the ground that by it the Steel Corporation was paying at least twice as much for its ore as it should.

"I knew nothing of it; but from my knowledge of the Steel Corporation I should have taken it for granted that they were not buying a 'pig in a poke,'" said the witness.

Colonel Roosevelt told Judge Dickinson that he had told him all he could remember.

"You have given me what you know; and I wanted to find about a few things that you did not know. Did you know that, within a short period—" began Judge Dickinson.

(Interposing) "You say you wanted to find out the things I did not know. There may be the implication in that that the knowing of those things would have altered my action. Not one thing could have been known by me about that company that would have altered my action. None of these things that you recite had the effect of a snap of the fingers on the situation as I have described it," said the former president with force.

A little later, he said: "I have explained what it was that I founded my judgment upon. I have explained, in my opinion, how that judgment was correct; that I acted in the only way that it was proper to act at that time; and if all those facts had been known to me, it would not have altered my action in the least; and that none of those facts have any bearing upon the situation as it was presented to me, and as I believe now, and am sure now, it existed. I cannot put it any stronger than that."

"Had the bureau of corporations made any reports to you in regard to the inner workings of the United States Steel Corporation and any relations between it and its competitors prior to that time?" asked Judge Dickinson.

No Reports Made

"I do not remember that the reports covered any relations between it and its competitors," was answered.

Upon further questioning, the colonel declared that he had never meant to assert that he knew there was no other cause for proceeding against the Steel Corporation up to the time of the purchase of the Tennessee company. What he meant was that his respective attorneys general had never reported to him that any other action should be instituted or had he received any information tending to support any proceedings.

Mr. Lindabury then examined the colonel in behalf of the defense, asking:

"You were asked by Judge Dickinson with regard to pools in which he assumed that the subsidiaries of the Steel Corporation were parties with outside steel manufacturers. Do you remember hearing from Judge Gary or anybody else, at the interview of Nov. 4, 1905, or the months preceding, that those pools, in so far as they were known of by Judge Gary or the Steel Corporation, were all broken up, through counsel employed for that purpose about a year before that time?"

"I certainly heard that; but whether I heard it at that time or not I cannot tell you."

"By whom were you informed?" asked Judge Dickinson.

"I cannot tell you. I think it was by Judge Gary. It might have been by Mr. Garfield."

"But you do not know who informed you?"

"I do not. I merely remember being informed. And I should not remember

it now if it had not been for the question put to me."

Corey Takes the Stand

Mr. Corey was the first witness at the hearings whose testimony was not largely a repetition of that rendered before the Stanley committee in Washington last year.

Judge Dickinson, who conducted the government's examination of Mr. Corey, read some extracts from certain records of the Steel Cerporation in which occurred the terms "protected markets" and "neutral market", and these terms the attorney wanted defined.

"The non-producing markets," said Mr. Corey, "are what are known as 'neutral markets'. The producing markets are called 'protected markets', and it is a general custom of rail makers not to invade the markets of a producing country. Then, too, there is a 'preferential market'; Canada, for instance, where England enjoys a preferential tariff."

"Are or have there been any agreements," asked Judge Dickinson, "between the Steel Corporation and makers in foreign countries regarding the distribution of the rail trade in the world's markets?"

"There have been agreements or understandings from time to time between the Steel Corporation and the foreign makers regarding the distribution of the rail markets of the world," replied Mr. Corey.

These agreements have provided that the Steel Corporation should have no foreign competition in the American market, that the Germans should have the German market, the French the French market, etc. No agreements, however, were made regarding the business of neutral countries. In the latter markets each producer of rails was unrestricted and all could go in and get any tonnage at what price they could. At least that is the way I understood it as I did not have charge of these matters."

"Who did have charge of them?" asked Judge Dickinson.

"Mr. Farrell," replied Mr. Corey. "He would go abroad and visit the foreign rail makers, making verbal reports when he returned."

Foreign Members

Mr. Corey went on to explain that beside the Steel Corporation, the Lackawanna and Pennsylvania Steel companies also took part in these foreign agreements. The foreign parties to the agreements included the rail makers of England, France, Germany, Belgium and some others. Mr. Corey believed there was such an agreement in effect as late as the latter part of the year 1910. He said that he believed that these agreements aided the Steel Corporation in increasing its foreign business. He said that he could not relate the details of these understandings as Mr. Farrell had always had full charge of the negotiations and arrangements, Mr. Corey never meeting the foreign manufacturers.

Judge Dickinson's examination carried Mr. Corey back to the days when he was works superintendent of the Carnegie Steel Co., and he read a number of extracts from the Carnegie minutes of that period in order to attempt to prove that the Carnegie company frequently purchased all the pig iron available in order to maintain the price of pig iron and, consequently, the price of the finished materials. Judge Dickinson wanted to know if such was the consistent policy of the Steel Corporation and of the Carnegie Steel Co.

"I'll answer that, judge," replied Mr. Corey. "In most cases the pig iron was purchased when it was needed. Sometimes it was bought at a certain price in order to maintain the market on finished materials. That was done on several occasions, but was not the rule. It was never done, however, for the purpose of influencing prices on scale contracts."

Were Friendly

Mr. Corey told of the friendly relations which existed between the various manufacturers of rails in this country, and he told briefly about the "rail pool", or agreement which terminated sometime in 1904 or 1905, to which the Illinois, Carnegie, Cambria, Lackawanna and Pennsylvania Steel companies were parties. The Steel Corporation, Mr. Corey said, was represented at different times by Messrs. Schwab and Buffington, Judge Gary and himself. He had no recollection of the Tennessee Coal, Iron & Railroad Co. ever being represented at the meetings, or taking any other part in the agreement.

Mr. Corey could not remember why the price of rails was reduced from $35 to $26 a ton in the early part of 1901. He remembered a conference between rail makers in 1907 or the early part of 1908 in which it was proposed to reduce the price of rails from $28 a ton; no reduction, however, resulted.

Mr. Corey was also questioned briefly concerning the taking over of the Union Steel Co. by the Steel Corporation. This transaction, he believed, was due largely to the interest of Henry C. Frick in the former company. Mr. Corey said that the Union and Carnegie Steel companies were great competitors and that the Union frequently took customers away from the Carnegie. In this connection, Judge Dickinson read an extract from a letter written by Mr. Corey prior to the taking over in which he advised that the Union be crowded as much as possible.

Defines Term

Judge Dickinson then read an extract from the Steel Corporation's minutes tonnage"; the minutes stated that imasin which occurred the term "back-log much as the Corporation was well fortified with "back-log" orders it could go slow in picking up new business. This term, said Mr. Corey, applied to the tonnage which, even if no further contracts were booked, would permit the mills to keep in operation. The judge then questioned Mr. Corey regarding certain contracts, wanting to know if Mr. Corey regarded them as "back-log contracts". In this line of questioning the judge evidently had in mind the large rail orders for the Harriman lines, taken by the Tennessee company in 1907.

On resuming the stand on Thursday, Mr. Corey testified concerning the operations of an "armor plate pool" which existed for several years prior to 1904. Mr. Corey stated that he was not familiar with the details of the agreement but that he had frequently taken part in discussions concerning it. The London representative of the Carnegie company at that time, said Mr. Corey, had full charge of all foreign business, and the "armor plate pool", therefore, as far as the Steel Corporation was concerned, was under his direction. The name of this representative Mr. Corey could not remember.

The American members of the world-wide armor pool, Mr. Corey stated, were as far as he knew, the Carnegie Steel Co. and the Bethlehem Steel Co. He could not remember whether, the Midvale Steel Co. was a party to the agreement. The foreign members included the armor plate manufacturers of Germany, France and England. It was not the custom, he said, for the armor plate makers to sell into producing countries. The Carnegie Steel Co., as far as he remembered, sold armor plate to Russia, Turkey and the United States. Asked by Judge Dickinson if there was any competition in armor plate prior to 1904, Mr. Corey said he did not remember any.

Plant For Japan

Mr. Corey told about a discussion, about May 5, 1902, in which was considered the proposal to establish an armor manufacturing plant in Japan. This plant was to be built in that country by the various members of the world-wide armor pool, the American members of the pool to be

allotted 57,000 tons of its capacity, and it was proposed to sell the plant to the Japanese government after the expiration of a certain period of years. At that time Mr. Corey stated that he saw no reason why the American members of the pool should go in and it was decided to let the foreign makers build this plant without American aid if they cared to.

A large part of Mr. Corey's examination, Thursday morning, was devoted to the foreign and domestic business of American rail mills. Judge Dickinson wanted to know whether the foreign prices on rails made by the Steel Corporation was greater or less than domestice prices. Mr. Corey answered by stating that subsequently to the formation of the Steel Corporation, mill prices on foreign business netted the producer less than on domestic business.

Judge Dickinson read from the minutes of 1906 of the Carnegie Steel Co. a statement by Col. H. P. Bope, in which the latter said that a representative of the Pittsburgh & Lake Erie railroad had told him that a series of tests had shown the Tennessee Coal, Iron & Railroad Co.'s open-hearth rails to be twice as good as the Carnegie company's Bessemer rails. Colonel Bope stated at the time that because of the heavy rail purchases during 1905 and 1906, a falling off could be expected in 1907, and that if the Carnegie company were not in a position by then to furnish open-hearth rails, it would suffer by competition with the Tennessee company. Judge Dickinson wanted to know if the railroads in general were not complaining about Bessemer rails at that time because of numerous accidents. Mr. Corey answered that in his experience he has found that the railroads have always complained and still complain. The judge was evidently trying to prove that the taking over of the Tennessee company by the Steel Corporation was due to the open-hearth rail capacity of the former. Mr. Corey admitted that prior to the completion of the rail plant at Gary, the largest open-hearth rail capacity which the Steel Corporation possessed was that of the Tennessee company.

Had Created Discussion

Mr. Corey said that the Tennessee company is favorably located for supplying rails throughout the south and southwest and that since 1907 it has supplied largely the rail needs for these sections of the country. Judge Dickinson wanted to know if the rail order of about 150,000 tons, given by Mr. Harriman to the Tennessee company, had created much discussion among the Steel Corporation and the Carnegie Steel Co. officials. Mr. Corey replied that it had. Other extracts which Judge Dickinson read showed that as a result of the Tennessee company's competition, the Carnegie Steel Co. was realizing the necessity of using every means in order to keep its customers in line.

Judge Dickinson read an extract dated March 30, 1903, of the minutes of the Carnegie Steel Co., in which it was said that the Tennessee company was selling rails at $2 above the "agreed price". The judge wanted to know if that meant that the Tennessee company was in the rail pool. Mr. Corey replied that he didn't remember exactly, but thought that the Tennessee company never was in the agreement.

Mr. Corey was asked if the Lorain and Johnson Steel companies ever gave money to the Carnegie Steel Co. in order to keep the latter out of the rail business, but this he could remember nothing of. Mr. Corey said that the Steel Corporation made no investigations and received no reports on the properties of the Tennessee Coal, Iron & Railroad Co. prior to taking over that concern.

Closed Down Furnaces

In reply to another line of questions by Judge Dickinson, the witness said that on one occasion he advised J. G. Butler Jr., of the Bessemer Pig Iron Association, that the Steel Corporation proposed to close down a number of blast furnaces and that the Bessemer Association ought to take the same action regarding certain furnaces which it controlled, in order to prevent a surplus of iron going onto the market. This advice was followed by the association, said Mr. Corey, but he could not remember the date.

The witness was asked if there ever existed a "pig iron committee". He replied that there was such a committee and that he acted as its chairman. The committee, he said, discussed general conditions in the iron and steel markets, but he could not remember that anything important was ever accomplished at its meetings.

Mr. Corey stated that the "Gary dinner" committees established prices, but that these were maintained very indefinitely after the committee meetings at which they had been established. In reply to Judge Dickinson's question, he said that Judge E. H. Gary was aware that the subsidiaries of the Steel Corporation were participating in agreements at the time.

"State whether or not, about Feb. 18, 1909, you and officials of the Carnegie Steel Co. wanted to cut prices and have an open market," directed Judge Dickinson.

"Yes," replied Mr. Corey, "but we were forced to maintain the prices longer than we thought was wise." These prices, Mr. Corey admitted, had not been fixed by actual agreement.

Judge Dickinson wanted to know if Harry Coulby, now president of the Pittsburgh Steamship Co., still retains any interest in the firm of Pickands, Mather & Co. This, Mr. Corey said, he did not know. The judge also wanted to know if Samuel Mather, a director in the United States Steel Corporation, is connected with Pickands, Mather & Co. Mr. Corey replied that to the best of his knowledge, he is.

Mr. Corey had no remembrance of any agreed prices on billets. "In July, 1904," he said, "we were negotiating with the Pittsburgh Steel Co. for a tonnage of billets, and the Republic Iron & Steel Co. came in quietly and took it away from us by quoting a price which was lower than the market at that time."

Judge Dickinson asked Mr. Corey if the Hill ore leases were made by the Steel Corporation for the purpose of keeping this ore out of the reach of competitors.

"I didn't hear that said," replied Mr. Corey. "I might say, however, that I was against the leases, both on account of the price and the conditions. The price was at least double as much as I believed we should have paid."

Judge Dickinson read several extracts from Andrew Carnegie's answer to the suit brought by Henry C. Frick for a settlement of his interest in the Carnegie Steel Co., in which Mr. Carnegie stated that the value of the property was not $250,000,000, as asserted by Mr. Frick, but about $75,000,000. Judge Dickinson endeavored to get Mr. Corey to admit that the valuations placed on the Carnegie Steel Co.'s properties were entirely too high. This, however, Mr. Corey would not do.

No Valuation Too High

"I will say once and for all," said Mr. Corey, "that no valuation too high or too great was ever set upon the Carnegie Steel Co."

Mr. Corey admitted that a great portion of the value of the Carnegie company lay in the personnel, the men who directed the organization.

In the cross examination of Mr. Corey, on Friday, by Cordenio A. Severance, of counsel for the defense, the latter first took up Mr. Corey's testimony of the past two days concerning the Tennessee Coal, Iron & Railroad Co. Mr. Severance wanted to know the details of Mr. Corey's verbal report made when he returned from a trip of investigation, on which

he was accompanied by presidents of the various Steel Corporation subsidiaries, following the taking over of the Tennessee company.

"I reported," said Mr. Corey, "that it would require an expenditure of $5,000,000 each year for a period of five years before the Tennessee company's properties could be sufficiently improved to make it a dividend payer. The open-hearth plant was in fair condition, the bar and plate mills were obsolete, while, outside of one blast furnace, which had been remodeled, the others were greatly in need of remodeling. Other improvements were also needed."

"If you assume it to be a fact, Mr. Corey," asked Mr. Severance, "that the Tennessee company was in debt for several millions of dollars, that it cost the company more to produce rails than it could get for them, and that the condition of the property was poor—if you assume all that—could that company still have continued in business as a manufacturer of rails?"

"I have assumed all that you have mentioned as true," said Mr. Corey, after his usual pause, "and I believe the Tennessee company could still have remained a competitor of the United States Steel Corporation in the rail business."

As to Gates' Holdings

"Did Mr. Gates ever offer to sell the Tennessee company to the Corporation at a price which you considered to be exorbitant?" asked Mr. Severance.

"No, he did not," said Mr. Corey. "Mr. Gates never offered to sell us the Tennessee company's securities, but he used to tell me when he met me what a fine company the Tennessee was and what a future it had. He told me its shares were worth $250. I informed him, however, that he was about $200 too high."

Mr. Corey related how the finance committee of the Steel Corporation, Lewis Cass Ledyard, Grant B. Schley and others met in Mr. Morgan's library in 1907.

"At this meeting," he said, "representations were made that if we did not buy the Tennessee stock from Moore & Schley, that firm would fail and pull down with it a number of banking institutions. I objected to the purchase, however, and I kept on objecting until the very end, when I concurred in order to make the vote unanimous."

Mr. Corey told about the project of the Jones & Laughlin Steel Co. about 1906 to build a new rail plant at Aliquippa, regarding which Colonel Bope had remarked that "they would be as bad off with respect to Chicago and Birmingham as we are."

"The Chicago district is the most favorably located in the country for the manufacture of steel products, and especially for rails," said Mr. Corey. "The east is the poorest location in the country to manufacture rails as there is so much competition there."

Mr. Corey said that rail prices are higher in all countries abroad than they are here at present. He told about efforts the independent rail manufacturers in this country have made at certain times to advance the $28 price, but the Steel Corporation has always opposed such a step.

"Is it not a fact," asked Mr. Severance, taking up another subject, "that in everything you did you acted under the advice of a legal firm which had no connection with the regular Steel Corporation counsel? I don't want you to mention any names."

"Yes, it is a fact," replied Mr. Corey.

"And is it not a fact that this firm advised you in connection with all price announcements made by different individuals at the meeting of the 'Gary dinner' committees that there was nothing illegal about them as long as no agreements were made?"

"That is true," replied Mr. Corey.

Mr. Severance got Mr. Corey to admit that no agreements were made at these committee meetings. Mr. Corey, however, said that the effect was the same.

Mr. Corey said that the various pools were brought to an end about 1904 through letters written by him to the presidents of the subsidiary companies at the instance of Judge Gary, who acted on advice from the same legal firm, whose name was withheld.

Judge Gary, said Mr. Corey, frequently went with him to attend the rail meetings. He said, however, that Judge Gary was aware of the existence of all the other pools and he told about one regular meeting of the plate and structural associations, held at the Waldorf-Astoria hotel in New York in 1902 or 1903. At this joint meeting of the two associations there were present Judge Gary and Messrs. Corey, Schwab, King, Felton and others. Mr. Corey was of the opinion that he had seen Judge Gary in attendance at other pool meetings, but he could not definitely recollect any of these occasions.

"You are positively sure that you saw Judge Gary at the structural and plate meeting in 1902 or 1903?" asked Mr. Severance.

"I certainly am, or I wouldn't have testified to it," replied Mr. Corey. "It occurred before I came to New York to be president of the Steel Corporation. The plate and structural meetings took place every three or six months, and I think I saw Judge Gary there on several occasions, but I can only remember the one definitely."

"During the latter portion of the time you were president of the Steel Corporation you were not always in perfect accord with Judge Gary, were you?" asked Mr. Severance.

"I do not believe I care to answer that," replied Mr. Corey.

"When you left the Steel Corporation you went away with some feeling toward Judge Gary, did you not?"

"We were not always in accord concerning policies as to the Steel Corporation's affairs, but I don't think there was any particular feeling."

"Was your feeling toward him cordial?"

"I won't say it was as cordial as it had been previously."

"Isn't it a fact," continued Mr. Severance, "that you quarreled with Judge Gary, as to which of you had the higher authority; and is it not true that shortly before your resignation the finance committee of the Corporation, in the latter part of 1910, decided in favor of Judge Gary?"

"That is true," said Mr. Corey.

Why Circumscribed Market

Mr. Severance then took up the question of sales of American rails in foreign countries, bringing out the fact that one reason American manufacturers do not sell rails into countries where they are produced is largely because of high protective tariffs. Mr. Severance also tried to shake Mr. Corey's testimony of Thursday by bringing out that in 1901 Mr. Corey sent a cablegram to Mr. Farrell in London, requesting him to find out at what price a Belgian maker had sold 50,000 tons of rails to the Harriman lines, for delivery on the Pacific coast. Mr. Corey admitted that he was much disturbed over this sale at the time, as he had understood that the agreement prevented foreigners from selling rails into this country at that time. Mr. Severance also brought out that toward the end of Mr. Corey's presidency, prices on foreign rail business netted higher than at the beginning of his term.

Mr. Severance failed to shake Mr. Corey's testimony that the Tennessee Coal, Iron & Railroad Co. was in active competition with the Steel Corporation in the manufacture of rails.

He wanted to know if a large portion of the Tennessee company's rails were not of such poor quality that they were sent back by the railroads. Mr. Corey admitted that this might have been true; also that the Tennessee company's cost of manufacture may have been very high, but he was still of the opinion that the Tennessee company would have continued the manufacture of rails.

"Within a short time, with the improvements they were putting in, they would have been able to reduce costs," he said. "Furthermore, they were putting a 'nuisance value' on the property and could have continued a long time."

Mr. Severance got Mr. Corey to admit that during his term as president of the Steel Corporation, "its competitors grew and flourished like a green bay tree," and that despite the acquisition of the Tennessee company and the Union Steel Co., and the construction of the plant at Gary, the Steel Corporation had a smaller percentage of the capacity for finished materials in 1910 than it had at the time of its formation.

As to Hill Ore Leases

Mr. Severance then took up the Hill ore leases and after securing from Mr. Corey the statement that the royalty in these leases should not have been higher than 50 cents a ton, turned him over for further cross examination to Frederick R. Kellogg, counsel for the Great Northern Ore trustees and other defendants in the suit. The latter so irritated Mr. Corey that he refused to answer what he termed as "utterly ridiculous questions". Mr. Kellogg in order to get Mr. Corey to admit that the royalty in the Hill ore leases was not too high, asked Mr. Corey the same question innumerable times, recasting it each time, however. This method of procedure greatly exasperated the witness.

Mr. Corey repeated his assertion that 50 cents was a high enough royalty. He said that this rate had obtained in the Canisteo and Walker leases, both of which involve large quantities of ore. Mr. Kellogg believed, however, that the Hill ore leases, with their clause permitting of cancellation in eight years and the choice of selection from 250,000,000 tons of high-grade ore, were more valuable leases, justifying a higher royalty than either the Canisteo or Walker, which involved only about 10,000,000 or 12,000,000 tons.

"Considering the advantages of the Hill leases over the other two leases, as I have pointed them out, has your opinion changed any in regard to the royalties being too high?" asked Mr. Kellogg.

"You haven't changed my opinion," said Mr. Corey.

Mr. Kellogg then took up a number of other leases which were made at royalties of $0.75, $1.25, $1.35 and $1 a ton and, after making comparisons, again asked Mr. Corey if his opinion remained unchanged.

"I decline to answer," said Mr. Corey. "You are asking me to guess at things I don't remember."

"Wouldn't you see any difference between the Hill leases and any small lease?" persisted Mr. Kellogg.

"I refuse to answer," said Mr. Corey. "The question is ridiculous. Put it down in the record that the witness refuses to answer."

Judge Dickinson spoke up at this point. He told Mr. Corey that while he could not advise him, he would suggest that Mr. Corey answer as best he could.

Ignorance of a Professor

"What is the Lake Superior district? asked Mr. Lindabury.

"The iron-bearing district south of Lake Superior, in the states to the south of the lake, Wisconsin and Michigan," replied the professor.

"Where is the Mesabi range?" persisted the attorney.

"Oh, in Wisconsin," said the professor, with an air of authority.

"Are you sure of that, Prof. Grasty?" asked Judge Dickinson, who was beginning to be alarmed.

"In Wisconsin," repeated Prof. Grasty.

"I will accept your suggestion," said Mr. Corey with a smile. "I will say that I consider there was no material difference in the Hill leases from these other leases."

"Is that your final word on the subject, and are you willing to put yourself on record that way?" persisted Mr. Kellogg.

Mr. Corey looked very much disgusted and turned to the stenographer and said:

"Repeat my previous answer."

As Mr. Kellogg was unable to get any further replies from the witness on this subject, the hearing was adjourned until Monday.

When Wm. Ellis Corey resumed the stand, Monday morning, as a witness of the government in the United States Steel Corporation dissolution suit, Judge Dickinson asked him several questions evidently designed to counteract any impression that Mr. Corey might be a prejudiced witness.

"How do your holdings of Steel Corporation securities compare with your other investments?" asked the judge.

"One-fourth of my fortune is in securities of the United States Steel Corporation," said Mr. Corey.

"Are you inclined favorably toward or are you against the government in the present suit?"

"I am naturally favorable to the Steel Corporation."

"Can you give me a more definite answer than that?"

"I am opposed to the government in this case," Mr. Corey replied.

Judge Dickinson then reverted to the purpose of the meetings held by the sub-committees appointed as a result of the so-called Gary dinners.

"What was the object of those pools? Why did they get together and talk about prices?" Judge Dickinson here referred to the rail meetings.

"I never did say they were pools," replied Mr. Corey.

Judge Dickinson then referred to Mr. Corey's previous testimony, in which he told of the Steel Corporation's refusal to advance the price of rails from $28 when requested to do so by the independent makers of rails.

"Did the refusal of the Steel Corporation to raise the $28 price prevent the independents from raising it?" asked the judge.

"As the price was not raised, it may have been due to the Steel Corporation's refusal."

"Well, wasn't it due to such influence?"

"Yes, I suppose so," said Mr. Corey. "I was opposed to advancing the price of rails at this time."

"Why were you opposed?"

"I felt that the $28 price was a fair one and if a price is fair, it should not be changed."

"Could or could not the Corporation make rails cheaper than its competitors?" pursued the judge.

"In my opinion it could," replied Mr. Corey.

Judge Dickinson then questioned Mr. Corey regarding the international rail pool, to whose existence he had previously testified.

"Was the tendency of this pool the raising of prices abroad?"

"I couldn't state positively, but I believe it was."

"Was the tendency of pools in general to maintain or lower prices?"

"Well, I have known pools to lower, maintain and raise prices," said Mr. Corey.

"State whether or not the purpose of pools is to increase competition."

"I believe the purpose of the pool was to decrease competition. But why depend on my memory, judge, when you can find all the data concerning

pools that you desire in the minutes of the Carnegie Steel Co?" said Mr. Corey, with a slight show of impatience.

Judge Dickinson asked Mr. Corey about what date he was informed by Mr. Farrell regarding the existence of the international rail pool. This, however, Mr. Corey was unable to recollect.

Selling Rails Abroad

"Did the American makers invade the English market about the time you got that understanding?" asked Judge Dickinson.

"I do not know," said Mr. Corey, "I don't remember the date. Some rails were sold into Great Britain, but I don't remember whether it was before or after I got my understanding as to the existence of the rail agreement."

In reply to another query by Judge Dickinson, the witness stated that he could not remember whether British makers had sold any rails into this country at or after the time he learned of the existence of the agreement.

Judge Dickinson then referred to the minutes of the Carnegie Steel Co., reading an account of a meeting held on Sept. 14, 1897, in which it was stated that the cost of producing pig iron was about $9.25 a ton, that the cost of converting pig iron into rails was $4.73 a ton and in which it was prophesied that the company would soon reduce the cost of converting pig iron into billets to $3.25 a ton. Judge Dickinson wanted to know if production costs were still further reduced after that and especially following the formation of the Steel Corporation, in 1901.

"In 1901," said Mr. Corey, "we considered that the plant was in first class condition in every way and after that the cost of production continued about the same."

The witness was then turned over to Mr. Severance for further cross examination.

"Did you wish to be understood as testifying in this case according to your personal interest in the matter?" asked Mr. Severance.

"I did not," replied Mr. Corey. "I merely wished to signify that irrespective of my holdings in the Corporation, or as to how it would affect me, the government on general principles ought to lose this case."

Mr. Severance did not continue this line of questioning, however, on account of Judge Dickinson's objections.

Mr. Severance asked the witness why it was that the independent makers of rails could not advance the price irrespective of what the Corporation did.

"It would be impracticable," said Mr. Corey. "It would also be impracticable for the Corporation to advance its price if the independent manufacturers refused to."

"Then the large manufacturers can keep down prices, but they cannot advance them unless the other manufacturers agree?" asked Mr. Severance.

"Yes, that is true," replied Mr. Corey.

"Isn't it a fact," asked Mr. Severance, "that, when the other steel producers reduced the wages paid to labor after the panic of 1907, they came to the Steel Corporation officials and asked them to take the same step, and that the Steel Corporation refused to make any decrease?"

"That is true," said Mr. Corey.

Mr. Severance wanted to know what the cost would be for erecting a complete rail plant. After calculating for a while, Mr. Corey replied that it would cost $10,000,000 or $12,000,000 to put up a plant including blast furnaces, which would produce 60,000 tons of rails a month, both Bessemer and open-hearth.

Mr. Corey was then excused.

Prof. Grasty on the Stand

John S. Grasty, professor of geology in the University of Virginia, was next called to the stand and questioned by Judge Dickinson in regard to the iron ores of Alabama. There are three kinds of deposits to be found there, he said, limonites, magnetites and hematites, the latter being most important. Gray hematite, Prof. Grasty said, is found in Talladega county, while Clinton hematite is found in the Birmingham district.

"The raw materials in the Birmingham district," said Prof. Grasty, "are better situated for the manufacture of pig iron than in any other part of the United States or the world. Iron ore, coal and limestone are all found within a narrow radius and nowhere else can iron be produced as cheaply as in the Birmingham district."

"More cheaply than at Gary, Ind.?" interrupted R. V. Lindabury, of counsel for the defense.

"Oh, yes," replied Prof. Grasty, "at Gary they have to get their ore from the Lake Superior district."

After showing his ignorance of the geography of the Lake Superior iron ore ranges, Prof. Grasty was questioned in regard to the Birmingham district. Of the best ore in this district, he said, the Tennessee Coal, Iron & Railroad Co., about 1907, owned 70 per cent. This 70 per cent, he said, represented only the best commercially available ore. Of the entire ore in the Birmingham district the Tennessee Coal, Iron & Railroad Co. owned 55 per cent. Putting it in figures, he said that the company owned over 400,000,000 tons of the 600,000,000 tons of commercially available ore in Alabama in 1907. Asked how he had secured his information as to Alabama ore, Prof. Grasty stated that he had spent considerable time there, prior to 1907, in looking over the situation in the interest of a syndicate which desired to buy some ore. This syndicate, he said, was composed of Douglas H. Gordon, William C. Seddon and others. He was unable to secure any commercially available ore property, however, he said, as it had all been taken.

"How much ore did you wish to buy?" asked David Reed Jr. in cross examination.

"About 500 or 600 acres," replied Prof. Grasty. "About 100,000,000 tons."

"As ore down there runs about 40,000 tons to the acre, wouldn't you have had to purchase considerable more than 500 or 600 acres in order to get 100,000,000?" asked Mr. Reed.

"Well, that was only our minimum. We wanted to start with that amount."

Mr. Reed then questioned the witness regarding a number of mines and unopened ore properties, which he said he had investigated. Prof. Grasty, however, was unable to give definitely the location or size of these mines or the names of the owners.

Plea for Protection

A deputation representing the leading shipbuilding companies of Canada waited on Premier Borden at Ottawa a few days ago, urging protection for the shipbuilding industry. The deputation included Capt. McDougall and Sanford Lindsey, of the Collingwood Shipbuilding Co.; John B. Miller, of the Polson Iron Works, Toronto; Messrs. Black and Cowie, of the Pickford & Black Co., Halifax; H. F. Bullen, of the Esquimault Marine & Dry Dock Co.; George D. Davie, of Levis, Que., and S. Dyment and W. J. Fair, of the Kingston Dry Dock & Shipbuilding Co. They were introduced to the premier by Major John A. Currie, M. P. Capt. A. McDougall was the principal spokesman, and urged that without government encouragement the industry could not be expected to make any progress and might have to close down altogether. There was no protection against British competition, and British-built vessels completely equipped could be brought in free of duty, though Canadians had to pay duties on some of the materials entering into the construction of vessels.

The Railway Equipment Co., railroad supplies, Oak and First streets, Portland, Ore., has distributed to the trade a very attractive large-sized calendar. In addition to the 1913 calendar, figures for 1912 and 1914 are shown.

MEN OF THE IRON TRADE

John Denison Hibbard, acting commissioner of the National Metal Trades Association, brings to that office the experience of a successful employer and the high qualities of a successful business man. He was born in Chicago, Dec. 2, 1854, and has always been intimately associated with the advancing of employers' policies in that city. He attended the public schools of Chicago, and following his graduation from the Hyde Park high school in 1883, entered the University of Michigan, graduating in 1887, with the degrees of B. S. and M. E. In the same year, Mr. Hibbard entered the employ of the John Davis Co., and in 1889, was elected vice president. The same year, he married Miss Josie Davis, daughter of John Davis. Eleven years later, upon the death of Mr. Davis, Mr. Hibbard became president of the company, holding that position until the partner's interests were sold to the United States Steel Corporation in 1907. The company was one of the largest houses in the central west interested in steam fitting supplies. Following the sale, the business was liquidated and the land and equipment disposed of. The steam fitting branch of the company was incorporated as the Davis Construction Co., with Mr. Hibbard as president. This position he still holds. From 1909 until 1912 he was also president of the North American Securities Co. He was president of the National Confederated Supply Associations in 1905-06, which society numbers among its members the large supply house associations of the country. As president of the Chicago branch of the National Metal Trades Association, in 1904, he was called upon to contest a machinists' strike, which was fought successfully by the employers under his direction. His interest in the advancing of working conditions has always been very lively and he has given his ready support to any measures for the uplifting of the employe. In the promotion of movements for the betterment of employes, such as accident prevention, apprentice schools, old age pensions, shop sanitation and hygiene, Mr. Hibbard believes that the Metal Trades Association has a splendid work mapped out for it. In his opinion, the society has a promising future in aiding the adjustment of the many problems confronting the employers and employes of the country by continuing its progressive actions along the broad, sympathetic lines the association has been following. It is believed probable that following Mr. Hibbard's formal election as commissioner in April, the office will be moved from Cleveland to Chicago.

Thomas Devlin, president of the Thomas Devlin Mfg. Co., Philadelphia, will sail Feb. 5, for Panama.

Harvey Higgins Jr. has assumed the position of advertising manager of the Standard Tool Co., Cleveland.

H. C. Frick has gone to Palm Beach, Fla. He left last week in his private car, Westmoreland, on the Southern railroad.

JOHN DENISON HIBBARD

S. P. Grace was elected president of the Engineers' Society of Western Pennsylvania at its annual meeting held in Pittsburgh last week.

Frank R. Rhodes, of Eaton-Rhodes & Co., pig iron and coke brokers, of Cincinnati, has returned from an extended trip to Cuba and Panama.

Samuel Mather, of Pickands, Mather & Co., Cleveland, and William G. Mather, president of the Cleveland-Cliffs Iron Co., left Jan. 29 for an extended European trip.

L. F. Hussy has resigned as advertising manager for the Standard Tool Co., Cleveland, effective Jan. 30. Mr. Hussey has not yet announced his plans for the future.

James B. Rider, general manager of the McKees Rocks plant of the Pressed Steel Car Co., Pittsburgh, has been elected a member of the board of directors.

Harry W. Goddard, president of the Spencer Wire Co., Worcester and Spencer, Mass., has been elected president of the Commonwealth club, a leading business men's club of that city.

Charles McClarey has been appointed assistant purchasing agent of La Belle Iron Works, Steubenville, O., to succeed G. Munn, now affiliated with the Youngstown Sheet & Tube Co., Youngstown, O.

H. Leonard Potts, for 25 years with the Potts Bros.' Iron Co., Pottstown, Pa., has associated himself with the firm of Potts & Wittman, Philadelphia, of which firm his brother, Henry Potts, is a member.

A. J. Babcock has been elected vice president of Manning, Maxwell & Moore, Inc. Until recently Mr. Babcock was in charge of the Chicago office of the company. He assumed his duties in New York, last week.

G. H. Jones, vice president of the Inland Steel Co., left this week for Panama, where he will inspect the workings of the canal. Mr. Jones expects to leave New Orleans Feb. 1, and will be gone about three weeks.

J. S. Fraser, who has been superintendent of the Neville and Edith blast furnaces of the Carnegie Steel Co., has accepted the position of superintendent of blast furnaces at the Clairton, Pa., works of the same company.

Frank H. Baker, formerly of the Carbon Steel Co., has recently been appointed general sales agent for the Electro Steel Co. Mr. Barker's office is located at 413 Fort Dearborn building, 105 West Monroe street, Chicago.

F. M. Gardner was elected president of the Gardner Machine Co., Beloit, Wis., at the recent annual meeting of the stockholders. Other officers elected were: F. E. Gardner, vice president, and L. W. Thompson, secretary and treasurer.

J. E. Fitzgerald has been appointed assistant to the president of the Augustine Rotary Engine Co., Buf-

MEN OF THE IRON TRADE

falo, N. Y. Mr. Fitzgerald was formerly connected with the sales department of the Brier Hill Steel Co., Youngstown, O.

Edwin H. Janes, vice president of the Talmage Mfg. Co., Cleveland, has disposed of interest in the company. Mr. James joined J. G. Talmage in the company 12 years ago to manufacture railroad supplies. In a short time he and his family will leave for Los Angeles, Cal., where he will enjoy the first vacation he has had in 18 years.

M. J. Filiatrault, was elected president of the Nameukon Iron Co., Duluth, Minn., at the recent annual meeting of the company. Joseph Farrier was named vice president; James Wharton, secretary, and Victor Huot, treasurer. The directors elected were: C. W. Eaton, Dr. McLaren, Victor Huot, Joseph Farrier, Charles Osterberg, Joseph Vanderyacht and M. J. Filiatrault.

Irvin F. Lehman, treasurer and general manager of the Knox Pressed & Welded Steel Co., Pittsburgh, will leave during the early part of February on a trip to England and the continent to interest foreign steel plants in Knox patented water cooled ports, doors and door frames. The company now has its devices in 46 open-hearth plants in the United States, having received duplicate orders from 31 plants and completely equipped throughout eight plants.

Charles J. Harrah was elected president of the Midvale Steel Co., Nicetown, Pa., at the recent annual meeting of stockholders held in Philadelphia. Other officers elected were: Vice president, James F. Sullivan; secretary, Henry M. Deemer; treasurer, John C. Dessalet; assistant treasurer, W. G. MacFarland. The following directors were elected for the ensuing year: Charles J. Harrah, James F. Sullivan, Axel Petre, Charles B. Dunn and Howard Sellers.

Joseph S. Stringham has succeeded T. H. Simpson, resigned, as general manager of the Monarch Steel Castings Co., Detroit, Mich. Mr. Simpson continues on the board of directors of the company. Mr. Stringham is a technical engineer, and was at one time connected with the Nicaragua canal project. A short time afterwards he became chief engineer of the Solvay Process Co. at Detroit, retiring about two years ago to establish the Frontier Engineering Co., that city.

O. DeG. Vanderbilt Jr., New York, has been elected president of the Weir Frog Co., Norwood, O., a suburb of Cincinnati, to succeeed Basil W. Rowe, also of New York, who resigned to become chairman of the board of directors. The name of this company was incorrectly published in THE IRON TRADE REVIEW of Jan. 23.

F. C. Tomlinson was elected a member of the board of directors of the Kelly Nail & Iron Co., which concern operates the Sarah furnace, at Ironton, O., at the annual meeting of the stockholders recently. He succeeds the late W. A. Murdock. The other directors, all re-elected, were: Oscar Richey, Austin Kelly, D. S. Gray, Mrs. D. Gregory Wright, H. E. Bradley and W. C. Willard, of Columbus. The officers of the company are: President and general manager, Oscar Richey, vice president, Austin Kelly, treasurer, T. J. Haynes.

C. E. ALLEN

Paul A. Ivy has been appointed general sales manager of the American Cast Iron Pipe Co., Birmingham, Ala., and has been transferred from the Kansas City office to Birmingham. Other changes in the selling organization are: Joseph W. Ivy appointed manager of the Kansas City office and transferred to that point from Dallas, Tex.; William J. Lyman appointed manager of the Dallas office and transferred from Birmingham; Henry D. Hughes transferred from Kansas City to Birmingham, and appointed manager of southern sales; D. W. Wallace transferred from Birmingham to Kansas City, and appointed assistant to Joseph W. Ivy.

C. E. Allen, who entered the employ of the Westinghouse Electric & Mfg. Co., in 1909, has been advanced to the position of assistant manager of the detail and supply department. He was formerly head of the transformer division of the same department. Mr. Allen was identified with the electrical transformer industry for several years subsequent to his graduation from the Virginia Polytechnic Institute in 1901. His first work along this line was with the General Electric Co., for which company he invented and perfected the "distributed core type transformer." He is first vice president of the Alumni Association of the Virginia Polytechnic Institute, an associate member of the American Institute of Electrical Engineers, a member of the National Electric Light Association and has written several papers on technical subjects.

W. E. Schaefer has retired as managing director of the Schaefer Mfg. Co., Berlin, Wis., manufacturing marine engines, quarry machinery, castings and foundry work, and the management has been given to Frank D. Chapman, treasurer of the company. Mr. Schaefer was re-elected president and H. H. Laing, secretary at the annual meeting, but Mr. Schaefer refused to again take the management because of a desire to retire from active business life. Mr. Chapman, the new manager, is the inventor and designer for several important Schaefer products, notably a concrete mixer which is being manufactured extensively. The company also makes castings for the Van Brunt Mfg. Co., Horicon, Wis., the Seelig & Barlow Washing Machine Co., Ripon, and other concerns. A large machine shop, garage and automobile repair shop is now being operated in connection with the shops and foundry.

LATEST MACHINERY NEWS COLLECTED IN LEADING MANUFACTURING CENTERS

In New York, the machinery houses report a slight increase in business during the past week. Trade has not reached anything like the active volume that marked last year, however, and was expected for the current month. There is still a confident tone to trade views, the present dullness being attributed to disturbances which must give way in reasonable time to the underlying strength of general conditions. Scattered buying furnished practically all the business of the week among machine tool sellers. A fair-sized list of specifications was put out by the American Locomotive Co., for its plant at Richmond, Va. Local dealers are informed that the National Transcontinental railway of Canada will shortly distribute orders on the list put out last fall, amounting to about $75,000. It is believed that a good part of this business will be placed with American interests. Dealers in contractors' machinery are taking a very satisfactory amount of business for this season of the year and the outlook for future orders is good, due to the large amount of municipal and quasi-public work pending.

In Chicago, the machine tool trade continues comparatively quiet, inquiries still being confined to individual or small lots of tools. Some good business is in prospect, however, which will be further augmented by additional railroad requirements. The latter will probably include a list from the Santa Fe, as no bids have been invited on the budgets which have been prepared. Some difficulty in obtaining deliveries has become evident in the case of some of the larger tools, but this condition does not appear to be at all general.

In Pittsburgh, a fairly good volume of business continues to be enjoyed by dealers and builders of machine tools and heavy rolling mill equipment. There has been an active demand for shears, and a number of particularly good inquiries have come out, including a 126-inch shear for the Reeves Mfg. Co., Canal Dover, O.; a 100-inch shear for the Carnahan Tin Plate Co., Canton, O.; several special shears for Dietrich Bros., Baltimore. Demand for punches continues good. The National Tube Co. has closed for a 24-inch punch and the Phillips Mine & Supply Co. has ordered a 24-inch punch. The Pittsburgh Crucible Steel Co., which only recently received bids on 23 electric cranes, is also negotiating for 18 shears and punches of various types, and the Cambria Steel Co. is asking bids on five punches and shears. The H. K. Porter Co. soon will close for three cold saws. The General Refrigerator Co. and the Pittsburgh Transformer Co. each has closed for a universal electric drill, and several orders for buffers and grinders have been taken. The Carnegie Steel Co. is negotiating for a double angle shear to cut up to 8 inches x 8 inches x ¾ inch. A number of orders for planers have been received from the railroads in this territory. Builders and dealers advise that this month's business has been fully 50 per cent in excess of the corresponding period a year ago.

In Cleveland, there is a more optimistic undertone to the machinery market than at any time during the past 10 weeks. For several weeks past, the market has been recovering from the dullness apparent since the election in November. The satisfaction expressed at this time is general, and one dealer stated that he was facing the greatest amount of prospective business that had appeared for five years. A large number of specifications for single tools have appeared, but no lists of any size were received during the week. Manufacturers of hoisting and conveying machinery are exceedingly busy. Railroads have not sent any lists into that territory so far during the year, but this class of business is expected to become active shortly.

In Cincinnati, the machinery market continues to be somewhat dull, and no developments have occurred during the past week to give it any strength. Business is not nearly so good as it was a month ago, and a slight recession can be noticed almost from week to week. This, however, is not true of all the plants, as some are still enjoying a fairly good business, but the general trend of the market is not so strong. The best seller among machine tools at present is radial drills, as both lathes and milling machines have dropped off to some extent. Planers are not selling strong, as is also the case with shapers. Baking machinery is in good demand and has been for some time and several manufacturers are very busy filling orders. Electrical machinery is selling fairly well, despite the decrease in orders during the past two months. The cause for this depression is generally accredited to the uncertainty of the coming administration's policy, which appears to make both manufacturers and buyers of machinery a little cautious about placing business.

New Construction

The Olive Stove Works, Rochester, Pa., recently completed an addition, 40 x 70 feet.

The Firestone Rubber Co., Rochester, N. Y., is erecting a plant in Brocton, Mass., for occupancy early next spring.

The Hartford Electric Light Co., Hartford, Conn., is having plans prepared for a new building, 100 x 130 feet, seven stories, to be erected on the site of its present offices.

The National Motor Vehicle Co., Indianapolis, is building an addition to its factory.

The Tool Steel Gear & Pinion Co., Carthage, O., a suburb of Cincinnati, will double the size of its plant in the near future. The new addition will be about 150 feet square, of two stories and of reinforced concrete construction.

The Seattle Can Co., Seattle, Wash., is contemplating the erection of a can factory in the Duwamish valley, Washington.

The Standard Foundry Co., Worcester, Mass., is to erect a new storehouse in Gardner and Tainter streets.

The building will be of brick or wood, mill construction, 32 x 91 feet, two stories with basement.

Plans have been filed by the Grand Trunk railway for a new roundhouse and machine shop in Toronto for the accommodation of 26 locomotives.

The Strong-Scott Mfg. Co., Winnipeg, Man., will extend its plant for the manufacture of flour milling machinery.

The International Harvester Co. has purchased property on York street, London, Ont., on which to build a large warehouse.

The Abitibi Pulp & Paper Co., Cobalt, Ont., will erect a large plant at Iroquois Falls, Ont., as soon as the spur line from the T. & N. O. railroad to the Abitibi river is completed.

The Sunbright Canning Co., Dickson, Tenn., has decided to rebuild its plant, which recently was burned. James Wyley is manager. The new factory will cost about $7,500.

The Berlin Machine Co., Beloit, Wis., is reported to be planning to build a new factory building 300 x 300 feet, two stories, construction work to start next spring.

A six-story factory building will be erected at the corner of Jackson avenue and St. Mary's street, New York, for the Steiber Iron Works. The building will occupy a plot 100 x 100 feet.

The citizens of Midland, Ont., have passed a by-law granting a bonus to the Midland Drydock Co., which will commence work at once on a floating dock costing $125,000.

The contracts for three new frame construction buildings at Augusta, Ga., will be awarded soon. These buildings will be for office and hotel accommodation, and will be three, eight and ten stories in height.

A. M. Rosenberg, manufacturer of hats, 11 Kent street, Newark, N. J., has filed plans for a factory to be erected at 17-21 Brenner street. The building will be 45 x 50 feet, two stories, of brick construction.

Plans for the establishment of a plant in Newport, Ky., have been completed by the Schenck Machine Co., Pittsburgh. The Business Men's Club, of Newport, secured the location of the industry.

It has been announced that the Midland Drydock Co., Midland, Ont., will start work at once on the construction of a $250,000 floating dock which will be capable of lifting the largest steamer on the great lakes.

The Royal Motor Co., organized recently, will build its plant at Strathroy, Ont., at an early date. The building will be 400 x 200 feet, two stories. The new company will employ about 300 men. The town of Strathroy will make a loan of $50,000, and give a free site with other inducements. J. G. Dunn is president, and C. C. Wright, of Strathroy, vice president.

Isaac Straus, 12-28 Chapel street, Newark, N. J., has filed plans for two manufacturing buildings, 16 x 50 and 18 x 63 feet, and a warehouse, 60 x 90 feet, two stories, of brick construction. The estimated cost is $20,000.

The Lehigh Navigation Electric Co., Allentown, Pa., recently organized by the Lehigh Coal & Navigation Co., is building a power house at Juto, Pa., where current will be transmitted at a voltage of 110,000.

The Tool Steel Gear & Pinion Co., Carthage, O., a suburb of Cincinnati, will double the size of its plant in the near future. The new addition will be about 150 feet square, two stories, of reinforced concrete construction.

Mr. Just, Brooklyn, N. Y., recently purchased from Daniel McKeeman nine lots on Vernon avenue of that city. Mr. Just intends to improve this property at once by enlarging the structural iron works which he represents.

Clearing the site for a new plant for the Heaps Engineering Works has begun on Lulu Island, New Westminster, B. C., and piles are being driven for the machine shops and other buildings. Henry Shaacke is president of the company.

The Kalamazoo Stove Co., Kalamazoo, Mich., is having plans prepared for the construction of a building for its furnace department, which will be 200 x 100 feet. It will also erect a three-story office building, 100 x 100 feet. The plans are not as yet completed.

The Dominion Nickel Co. will build a smelter at or near Sudbury, Ont. It has bought the Murray mine, and the northern nickel range from the Lake Superior Power Co. J. R. Booth, Ottawa, Ont., is at the head of the concern.

The Balbach Smelting & Refining Co., Bay Front, Newark, N. J., will erect a steel melting furnace, 64 x 85 feet, one story, to cost $5,000, and a factory, 110 x 208 feet, one story, steel frame construction, estimated to cost $20,000.

The United States government is advertising for bids on a new three-story post office building to be constructed at Augusta, Ga. The city of Augusta, Ga., recently awarded two contracts for additional levee work to provide for flood protection.

Westinghouse, Church, Kerr & Co., 10 Bridge street, New York, have taken a general contract for a round house and repair shop to cost about $150,000, and a power plant and boiler house, estimated to cost $100,000, to be erected at Communipaw, N. J., for the Jersey Central railroad.

The Cross Fertilizer Co., Ltd., Sydney, N. S., will spend $80,000 on an extension to its plant this year. The new plant will consist of dissolving dens, overhead railways, conveyor and a disintegrating machine, and will have a capacity of 10,000 tons of mixed fertilizer per annum.

The Edison Electric Illuminating Co., 300 Pearl street, Brooklyn, N. Y., has let a contract for a power house to be erected in that city. H. D. Best & Co., 320 Fifth avenue, New York, are the general contractors for the work, which is estimated to cost about $150,000.

The Niagara Falls Furnace Co., Niagara Falls, N. Y., will erect a gray iron foundry and machine shop. The officers of the company are: President, A. V. Davison; vice president, P. J. Hoey; secretary, J. M. Hoey, all of Kittanning, Pa., and treasurer, W. P. Taylor, Aspinwall, Pa.

The Nickerson-MacFarlane Machinery Co., Tacoma, Wash., has announced that it will spend $40,000 on a new four-story concrete machine shop and modern equipment, to be built on its 17-year leasehold from the Northern Pacific railroad, at Fifteenth and Dock streets.

The Wrought Washer Mfg. Co., South Bay and Reynolds streets, Milwaukee, Wis., has been granted a permit to construct a $55,000 addition to its works. The building will be of concrete and steel construction and be devoted to manufacturing and shipping.

Sammon Bros., Arlington avenue, Newark, N. J., has taken a contract to erect a new factory building for the Atha Tool Co., Chapel street and Albert avenue. The building will be 169 x 168 feet, one and two stories. Plans were prepared by Frederick A. Phelps, 9 Clinton street.

Baker & Co., Inc., manufacturers of platinum goods, 408-411 New Jersey R. R. avenue, Newark, N. J., have filed plans for a factory to be erected at Murray and Austin streets. The building will be 50 x 188 feet, three stories, of concrete construction, and is estimated to cost $73,000.

A contract has been awarded for the construction of a factory for the Kimble Electric Co., now located at 1121 Washington street, Chicago. The new building will be 148 x 125 feet, two stories, located at 632-642 Northwestern avenue. Machinery requirements are not accurately known as yet. Holabird & Roche, Chicago, are the architects.

The Arcade Mfg. Co., Freeport, Ill., is considering extensive enlargements to its plant, the details of which have

not yet been fully worked out. This company is a prominent manufacturer of molding machines for foundry use, and also makes an extensive line of light hardware, including coffee mills, toys, jackstones, etc.

Bids on the National theater, which is to be erected at Fifth and Walnut streets, Louisville, Ky., at a cost of $200,000, will be opened by Joseph & Joseph, architects, Commercial building, Louisville, Feb. 3. The general design of the structure calls for reinforced concrete. Elevators, heating equipment, etc., will be needed.

The Boston & Maine railroad has awarded the E. J. Crass Co., Worcester, Mass., the contract for a storehouse to be erected in connection with its shops in Fitchburg, Mass. The building will be 40 x 200 feet, one story, brick with concrete foundations and floor, tar and gravel roof.

The building expenditure of thirty-seven of the principal cities and towns of Canada during 1912 reached the total of $185,898,535, an increase of 41 per cent over the 1911 figures. The percentage of buildings of steel and concrete construction is also estimated to have risen, so much so that a scarcity of steel is expected in the Canadian west next summer.

The Indiana Foundry Co., Ltd., Indiana, Pa., recently completed an addition to its foundry, which will add about 30 per cent to its output, and is planning to build a two-story pattern shop 65 feet square, for which new equipment will be needed. This company has been running at its full capacity for the past two years, and reports the outlook for business very flattering.

The Waukegan Boat Co., a Wisconsin corporation capitalized at $75,000, by E. C. True, John W. Williams and Albert Leland, of Milwaukee, has leased a manufacturing site at Waukegan, Ill., for 10 years and will start work on the erection of a plant as soon as the frost leaves the ground in the spring. The plant will represent an investment of approximately $50,000 for building and equipment.

The Brunswick-Balke-Collender Co., Chicago, has purchased an 8-acre tract at West Forty-seventh street and Western boulevard, on which it will erect a new plant. The company's present factory building at 340 West Huron street will be rented and the property at the corner of Crosby and Oak streets will be sold. All the company's activities will be concentrated in the new plant.

The Acme Brick Co., operating a plant six miles west of Edmonton, Alberta, will spend $250,000 on additions and improvements to its plant shortly, increasing its output from 75,000 to 250,000 a day. A direct radiated heat dryer, a pulverizing machine, a special excavator costing $12,000, are among the new equipment to be installed. William Cannell is president of the company, and J. P. Henry, manager. The Lawhead Engineering Co., Minneapolis, is preparing the plans.

The Besley Mfg. Co., Beloit, Wis., manufacturing taps, tools and disc grinders, has purchased land adjoining its present works and intends to begin at once the erection of two new buildings. The additions will make possible the employment of 100 additional skilled mechanics. The Besley company is considered the largest producer of tapper taps, for making bolts and screws, in the United States. Charles Munson is superintendent.

Operations have been started at Prince Rupert, B. C., on the building of the huge dry dock which is being constructed there. It will be the largest on the Pacific coast; will have a lifting capacity of 20,000 tons, a length of 604 feet and a width of 100 feet. The dock will be built in two years and will cost $3,000,000. Construction work on the concrete foundations for the new power house and machine shops to be used in connection with the dock have been started.

The Pacific Scale Works has been organized at Fond du Lac, Wis., by Charles Fay and W. F. Schmidt, to manufacture several new types of weighing devices designed and patented by Mr. Fay. The men propose to incorporate within a short time and erect their own plant, now occupying leased quarters on South Main street. Orders on hand and in process of manufacture are claimed to be sufficient to keep a good-sized factory running at capacity for at least 14 months.

The common council of Ashland, Wis., has voted to bond the city in the sum of $50,000 for the construction of the first of a series of municipal docks, which will eventually represent an investment by the city of Ashland of more than $250,000. The dock will be constructed of concrete and steel and contracts will be awarded not earlier than March 15. The city recently made large purchases of dock sites on the shores of Chequamegon bay, Lake Superior, on the city's water front.

A contract has been awarded for the erection of a manufacturing plant for Mathias, Klein & Sons, manufacturers of electrical machinery, at present located at 563 West Van Buren street, Chicago. The new plant will be located at 3226-3270 Belmont avenue, Chicago, and will consist of a blacksmith shop, 65 x 165 feet, one story; main building, 52 x 215 feet, three stories; boiler room, 50 x 53 feet, one story; engine room, 25 x 40 feet, one story; pump house, 16 x 12 feet, one story. F. E. Davidson, 53 West Jackson boulevard, Chicago, is the architect.

The National Cast Iron Pipe Co., Birmingham, Ala., advises that it recently has placed orders for pattern shop machinery, tank, pumps, etc., for its new pipe plant, and will, within the next few days, purchase machine shop equipment. This company also advises that it is ready to receive bids for the construction of its main foundry buildings, which will be of structural steel with brick walls. The company plans to close the contract for this work by Feb. 10. Bids have been received for the erection of commissary buildings of brick construction. In general, the company reports good progress in the carrying out of the plans for the new plant.

Considerable progress has been made on the construction of the new plant of the Alton Steel Co., Alton, Ill. It is expected the first unit will be in operation by May 1, and the entire plant by July 1, 1913. The plant will cost approximately $750,000, and will be devoted to the manufacture of steel hoops and bands. The new plant is located on a plot of 45 acres, just outside the city limits of Alton. The officers of the Alton Steel Co. include: T. S. Clark, formerly president of the Perry Iron Co., Erie, Pa., president; John R. Hastings, formerly with the Ohio Steel Co., Lima, O., vice president; E. J. Anglin, of Pittsburgh, treasurer, and J. V. E. Marsh, an attorney of Alton, Ill., secretary. The company is incorporated in Illinois and the capital stock has recently been increased to $600,000.

The Gardner Machine Co., Beloit, Wis., has decided to erect a large addition to its plant, work to begin April 1 and to be completed by mid-summer. The expenditure was authorized at the annual meeting, at which the reports of officers showed an increase of 77 per cent in the volume of business during 1912 as compared with the year 1911, and factory facilities at this time only 75 to 80 per cent of that required to care for orders now on the books. The company manufactures grinders and abrasive discs and has the exclusive rights for the production and sale of adamite and amalgite discs in United States and Canada. Automobile manufacturers now form one of the largest groups of customers

which the Gardner company has on its books. The new addition will be 100 feet long and as wide as the present main structure, of reinforced concrete and steel construction.

The Burr Co., Champaign, Ill., founder and machinist, reports the following additions under construction: Foundry, 132 x 50 feet, with two side wings of 35 feet each; a building 136 x 40 feet for fabricating structural material; boiler plant and storage sheds for supplies for the foundry, and structural shop and office building, 37 x 100 feet, the last being two stories, of brick construction. The office building is nearly completed, and the other buildings have been completed to the foundation line. Work of construction will continue through the winter. The company is installing a cupola of six tons per hour capacity, with pressure blower and all necessary cleaning machinery. The foundry building will be entirely of steel construction, with factory ribbed glass, giving a large area of lighting surface, and will be fitted up with the most modern equipment. The structural shop will be of brick and steel construction, with a large amount of glass surface. All equipment for the foundry has been purchased, and part of the equipment for the structural shop. The company advises that they will need a superintendent for the plant and possibly a foundry foreman and foreman for the structural shop.

Machine Tools

The H. K. Porter Co., Pittsburgh, is asking for bids on three cold saws.

The Cambria Steel Co., Johnstown, Pa., has entered the market for five punches and shears of various types.

The Phillips Mine & Mill Supply Co., Pittsburgh, has closed negotiations for a 24-inch punch.

The National Tube Co. has closed negotiations for a 24-inch punch to be installed in its plant at McKeesport, Pa.

The Alexander Barr Co., Pembroke, Ont., will need new equipment for its factory, which was burned recently. Several new forges will be installed.

The Sydney Foundry & Machine Co., Ltd., Sydney, N. S., contemplates installing new forging equipment, traveling crane and the latest type of casting machinery.

Yerkes & Pritchard, Paris, Ky., have made plans for the equipment of a large machine shop for automobile repair work, and will purchase a moderate equipment of machine tools.

The Pittsburgh Crucible Steel Co., Pittsburgh, has entered the market for 18 punches and shears of miscellaneous type for installation in its plant at Midland, Pa.

The Carnegie Steel Co. has opened negotiations for a double angle shear, mounted on turntable, to cut to 8 inches x 8 inches x ¾ inch, for installation in the warehouse at Baltimore, Md.

The Chaplin Wheel Co., Chatham, Ont., will build an automobile machine shop addition to its present plant at a cost of $10,000, and will require machinery for the same.

The Champion Wire & Iron Works, Louisville, Ky., has erected an addition and will install new equipment. J. H. Shrader is in charge. The concern was recently incorporated with $10,000 capital stock.

The rolling mill of the New Haven Iron & Steel Co., New Haven, Conn., will shortly resume rolling bar iron. The mill has been closed since June 1, 1910. New machinery and equipment are being installed.

The Pittsburgh Transformer Co., Pittsburgh, recently has purchased a universal drill from R. E. Graves, 1307 First National Bank building, Pittsburgh representative of the James Clark Jr. Co., Louisville, Ky.

Carr Bros., Nashville, Tenn., will install a large sawmill near Pineville, Ky., having purchased a large tract of hardwood timber from the Continental Coal Corporation, of Pineville.

Woodworking machinery will be needed by H. R. Lemay, White Cloud, Ind., near Corydon. His handle factory was recently burned with $5,000 loss, and rebuilding is to be undertaken at once.

The American Locomotive Co. has issued a fair-sized list of specifications for machine tools for its plant at Richmond, Va. It is estimated that the specifications represent between $30,000 and $40,000 worth of machine shop equipment.

The Hermes Motor Car Co., Cincinnati, advises that it has incorporated to manufacture a six-cylinder automobile, and has decided upon a location for this plant in the northern part of that city on the C., H. & D. railroad. As soon as active business can be engaged in, the capital of the company will be increased to $250,000. The company proposes to build about 250 cars during the first year, commencing about April 10. The only new tools that will be needed for some time are a few electric drills and bench tools. Albert Kleyboldte, of Cincinnati, is president of the company, and Powell Crosley Jr., also of that city, general manager.

Car Buying

Car orders for the week ending Jan. 25 were as follows:

Illinois Central, 1,000 hoppers to Pullman Co.

National Railways of Mexico, 30 tank cars, to the Pressed Steel Car Co.

Toledo & Ohio Central, 1,000 general service cars, to the Ralston Steel Car Co.

Louisville & Nashville, 2,500 hoppers to the Pressed Steel Car Co.

Wheeling & Lake Erie, 1,000 gondolas to the Standard Steel Car Co., and 500 to the American Car & Foundry Co.

Canada Northern, 3,100 freight and 76 passenger, divided between the American Car & Foundry Co. and the Canadian Car & Foundry Co.

Southern, 100 gondolas and 50 hoppers to Cambria Steel Co.

New inquiries as follows have been sent out:

The Pennsylvania Railroad system, 12,300 freight cars, involving an expenditure of $16,000,000.

The Atlantic Coast Line, 1,000 box cars, 300 flats and some refrigerator cars.

The Chesapeake & Ohio, 3,000 hoppers.

The Norfolk & Western, 1,000 box and 300 flat cars.

The Rock Island, 1,000 box and some refrigerator cars.

The B. & O., it is understood, plans to buy 1,500 additional cars and 100 additional locomotives.

Power Plant Equipment

The city of Nacodoches, Tex., is preparing to build a municipal lighting plant at an approximate cost of $30,000.

The Electric Co. of Canada will probably build its new plant, costing $150,000, at Pembroke, Ont., and will employ 250 hands at the start.

The citizens of London, Ont., will be asked to authorize the expenditure of $1,000,000 on the electrification of the London & Port Stanley railway.

The Kentucky Utilities Co., which will take charge of an electric light plant at Elizabethtown, Ky., March 1, is reported to have plans for elaborate improvements.

The Bloomfield Roller Mills, Bloomfield, Ky., is rebuilding its plant, and will install a new boiler and engine, along with other equipment. The estimated cost of the changes is $3,000.

W. A. Burkhart, Vine Grove, Ky., will purchase equipment for an electric light plant in a few weeks, having contracted with the municipality to install a lighting system.

The Wedgerite Chemical Co., recently incorporated at Louisville, Ky., is now completing the equipment of a plant south of that city, and is in the market for six motors.

The equipment to be installed in the power plant of the United Water, Light & Traction Co., Somerset, Ky.,

will include a boiler and turbo-generator. Sargent & Lundy, Chicago, have charge of the improvements.

The Kentucky Jewel Coal Co., Hazard, Ky., is to purchase power and special mining equipment in the near future, having started preliminary work on the installation of a 750-ton coal plant near that city.

Electrical work at a cost of $185,000 is planned by the Moosejaw, Sask., city council. W. F. Heal, clerk. The requirements for 1913 include a 1,500-kilowatt turbo-condenser, two 500-horsepower boilers; two stokers, economizer and draft equipment, air pump and steam piping.

Herbert Morris, Ltd., a new firm which recently opened an office and factory in Toronto, has booked orders for six two-ton electrically-operated overhead traveling cranes for the Whitehead Torpedo Co., of Toulon, France, and two five-ton electric cranes for the South Durham Steel & Iron Co., of West Hartlepool, Eng.

The Superior Steel Co., Carnegie, Pa., has installed a 38 x 60 foot Hamilton Corliss engine in its power plant. The installation was made by the Hooven, Owens, Rentschler Co., Hamilton, O., with offices in the Oliver building, Pittsburgh. The company has ready for shipment a 42 x 50 inch engine to the Superior company. Engines will replace smaller units.

The Walla Walla River Power Co., Walla Walla, Wash., has been incorporated to build a 2,000-horsepower, hydro-electric power plant, to be built on the Walla Walla river, seven miles above Milton, Ore. Those interested in the company are: C. E. Demaris, Amos Demaris, Harry Huber, John Ross, J. A. Hayton, Henry Hopkins, Jake Demaris, Sherman Mizer, H. Rhuberg, Charles Heathington, Clarence Wallace and N. T. Manela.

Announcement has been made by the Ozark Power & Water Co., which is constructing a 15,000 - horsepower hydro-electric plant on the White river in southwest Missouri, that the plant will be ready for operation by April 15. The new plant will furnish electric current for operation of the street railway lines in Springfield, and also for transmission to the Empire District Electric Co., Joplin, it being controlled by the same interests as the latter company.

The Cape Breton Electric Co., Cape Breton, Ont., will spend $200,000 on equipment this year. Included in this work will be the construction of a transmission line from the Sydney, N. S. power house to a new concrete sub-station to be erected at Reserve Junction. Additional machine shop equipment, railway motors, warehouse and freight shed, a new telephone dispatching system, and a new ferry boat will be needed. The capacity of the Sydney car house may also be increased about 50 per cent.

The Lakeside Paper Co., Menasha, Wis., has awarded contracts for the construction and equipment, save electrical machinery and appurtenances, for its big addition at West Menasha, as follows: Pressure filter plant, 2,000,000 gallons capacity, Power Plant Specialty Co., Chicago; chain drive, 700-horsepower, Morse Chain Co., Chicago; supercalendering machines, Norwood Engineering Co., Florence, Mass.; Jordan engine, wet machine, screens, dusters, etc., Appleton Machine Co., Appleton, Wis.; paper machine screens, Wandel Wire Co., Walpole, Mass.; automatic stokers, Murphy Stoker Co., Detroit. The concrete and steel construction will be done by Walter Blake & Co., Appleton, Wis. The addition will be 94 x 100 feet, two stories. R. S. Talbot, of Appleton, is consulting engineer.

Water Works

Covington, Ky., has completed plans for the sale of a $200,000 issue of bonds which will provide for the laying of large water mains in South Covington. The material probably will be purchased in the near future.

New Buyers

The Piedmont Tin Co., Lincolnton, N. C., will expend $50,000 to sink a shaft and install additional machinery.

The Schuessler Foundry Co., Belleville, Ill., has been incorporated with a capital stock of $2,500. The incorporators are: Adolph J. Schuessler, Helen Schuessler and Oscar P. Schuessler.

Elevators will be needed for a new 100-room addition which is to be erected by the Hermitage hotel, Nashville, Tenn. Robert Mayer can give details.

Bottling equipment will be needed at once by the Coca-Cola Bottling Co., Fulton, Ky., which has completed a plant for the equipment of a factory there.

The Carnegie Coal Co., Pittsburg, has purchased the property and holdings of the Charleroi Coal Co., of the Pittsburgh Plate Glass Co. The mine will be remodeled and its capacity enlarged.

The United States Steel Hoop Co., recently incorporated under a Massachusetts charter with a capitalization of $500,000, to engage in the manufacture of all kinds of hoops for barrels and kegs, is said to be seeking inducements to locate in Worcester, Mass., in preference to Boston, the place originally selected as its headquarters.

A new apartment house, to be erected in Louisville, Ky., at a cost of $75,000, will contain two elevators. Edward G. Morgan is owner. The new building replaces one recently burned.

Tenders will be open until Feb. 24 for the supply to Regina, Sask., of street railway steel, angle bars, track bolts and nuts, washers, spikes, etc.; copper rail bonds, copper and iron wire; pole line hardware, etc.

The E. J. Welch Foundry Co., Chicago, has been incorporated with a capital of $15,000 by Ambrose Ryan, Erwin M. Roemer, George and W. H. Haight, 404 Royal Insurance building, Chicago.

F. L. Estes & Co., Nashville, Tenn., manufacturers of wood-working machinery, have increased their capital stock and will install additional machinery. F. L. Estes is general manager of the concern.

The Senn Machinery Co., Chicago, has been incorporated with a capital of $2,500 to engage in engineering and manufacturing. The incorporators are: Lizzie Anna Senn, Herbert Tope, and Frank Huson.

An automobile plant at a cost of $75,000 will be built in Strathroy, Ont., for the Royal Auto Co. Machinery and equipment will be purchased, transmission and hydraulic machinery being needed. J. G. Dunn, of the Cameron Dunn Co., has charge.

Chisholm Dunn Telephone Appliances, London, Ont., contemplates the purchase of machinery and equipment required for manufacturing telephone receivers, transmitters, etc., also stock required in the manufacture of brass and nickel goods.

The Central Car Co., Connersville, Ind., has been incorporated with a capital stock of $100,000. The new concern will make one model only of six-cylinder automobiles. The directors are: Joseph E. Huston, John W. Burk, Edward W. Ansted, Robert T. Huston, Frederick L. Barrows, Thomas C. Bryson and James M. Heron.

The Momentum Blower Fan Co., Minot, N. D., was recently incorporated with a capital of $60,000 to manufacture a new type of fan for use on threshing machines. A number of the machines have already been manufactured and are said to have given great satisfaction to the users. The fans were manufactured last fall in

the plant of the Minot Foundry Co., which was destroyed by fire about a month ago. The incorporators of the company are: E. J. Wilson, Minot; D. H. Cook, Lansford, and Lewis Ellis, Minot.

The Macdonald Car Buffer Co., Granby, Que., has been incorporated at Ottawa with a capital of $500,000, to manufacture all kinds of cars, car buffers, conveyances and railway material of every kind; to manufacture and smelt iron and other minerals, etc. The incorporators are Maurice Alexander, Patrick Clarke Dwyer, Darley Burley Smith and Jean Gustave Mignault, all of Montreal.

The American Engineering & Machinery Co., Ltd., Montreal, Que., has been incorporated at Ottawa with capital stock of $50,000 and will manufacture and deal in instruments, machines and machinery, besides acting as consulting and contracting engineer. It has the folowing incorporators: Louis Joseph Loranger, Joseph Alexander Prud'homme, Maurice Loranger, and Bernard Melancon, all of Montreal.

The Chase Mfg. Co., Mason City, Iowa, manufacturer of gasoline engines and steel manure spreaders, has recently been reorganized with an increase of capital stock of $300,000, with a complete change in officers. The present management consists of W. L. Patton, president; R. M. Halweg, assistant manager, Sern Madsen, engineer; H. C. Walters, factory superintendent. The plant is equipped with the most up-to-date machinery for the manufacture of its products.

The Fitzgibbon & Crisp (Inc.), Trenton, N. J., has been incorporated with a capital of $100,000, and will take over the plant of the Fitzgibbon & Crisp Carriage & Wagon Co., which recently was sold at receiver's sale. The incorporators are L. L. Woodward, Joseph Williams and Walter F. Smith. The company will manufacture and deal in various kinds of motors, engines, machines, etc., and will deal in carriages and automobiles.

The Ferguson Iron & Steel Co., Inc., has just been incorporated with a capital stock of $100,000 to build a fabricating plant in Buffalo, N. Y. The incorporators and directors are: James E. Ferguson, John W. Robinson, Charles Kennedy and Maurice C. Spratt. Mr. Ferguson is president of the new concern. He was vice president and sales manager of the Lackawanna Bridge Co. for nearly two years, and prior to that was connected with the firm of Joseph T. Ryerson & Son, Chicago.

The Toronto Structural Steel Co., Ltd., Toronto, Ont., has received Dominion incorporation with capital of $1,000,000 to carry on the business of bridge building and of erecting iron and steel structural work and to manufacture materials needed in the same. The incorporators are Reginald Holland Parmenter, Arthur John Thomson, William Symon Morlock, Norman Bailie Wormwith, Stuart Macfarlane, Grant Fletcher and Alexander H. C. Gibson, all of Toronto.

The Pioneer Steel Block Tire Co., St. Louis, has been incorporated with a capital stock of $25,000, to manufacture a new steel motor tire, the invention of Fred W. Karches. The invention, which has been patented, covers hollow steel blocks that fit over a solid rubber tire and acquire resiliency therefrom while removing the wear from the rubber. The company has opened offices in the Security building. The incorporators are: William Dee Becker, president; J. George Ganahl, vice president; Nicholas Le Brun, secretary and treasurer; Fred A. Gerber and Fred W. Karches.

The Hermes Motor Car Co., Cincinnati, O., advises that it has incorporated to manufacture a six-cylinder automobile and that it has decided upon a location for this plant in the northern part of that city on the C., H. & D. railroad. As soon as active business can be engaged in, the capital of the company will be increased $250,000, and it is proposed to build about 250 cars during the first year, commencing about April 1. The only new tools that will be needed for some time are a few electric drills and bench tools. Mr. Albert Kleyboldte, of Cincinnati, is president of the company, and Powell Crosley Jr., also of that city, general manager.

The firm of James Stewart & Co., general contractors, 30 Church street, New York City, has been incorporated under the laws of New Jersey with a capital stock of $3,750,000, divided into $1,000,000 7 per cent cumulative first preferred stock, $1,500,000 7 per cent cumulative second preferred and participating, and $1,250,000 common. With the exception of $250,000 in common stock which is being held in the treasury all the shares have been issued. The officers of the company will be: President, A. M. Stewart; vice president, James C. Stewart; second vice president and western manager, Henry F. Lowman; third vice president and chief engineer, Charles F. Transon; treasurer, W. A. Rowan, and secretary, J. B. A. Fosburgh. The balance sheet of the new corporation shows total net assets of $2,857,109, after the payment of all obligations.

New Incorporations

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

Tulsa Spring Wheel Co., Tulsa, Tex.; $50,000; by J. B. Dunlap, Peter Deichman, W. T. Smith.

Independent Shoe Machinery Co., Boston; $30,000; directors, C. F. Slaclepole, president; Alfred H. Howard, treasurer; L. W. Peters.

The Roush-White Co., Stuttgart, Ark., general machine and repair business; $25,000; by H. F. Roush, S. White, O. M. Young.

The Holloware Process Co., Camden, N. J.; $50,000; mechanical engineers; by Joseph A. Lewis, M. G. Ryan, F. C. Meeter.

Peerless Welding & Mfg. Co., Boston; $10,000; directors, H. D. Waterhouse, president; Ernest W. Saunders, treasurer, and F. L. Hewitt.

Modern Water Motor Co., Hamilton, O.; $10,000; by Caroline Weigel, Louise E. Weigel, John A. Weigel, Julia Krokmann, A. Krogmann.

Plost Post Co., Marion, Ind.; to manufacture iron fence posts; $8,000; by Philip Matter, Isaac Plost and Earl Newhouse.

New England Iron & Metal Co., Inc., New Haven, Conn.; $10,000; by Jacob Berkovitz, Ida Gitlitz and Esther C. Gitlitz.

Harrisburg Steel Corporation, Jersey City; $100,000; to manufacture steel; by John R. Turner, L. H. Genther and H. A. Slack.

Hamilton Otto Coke Co., Hamilton, O.; $700,000; by J. C. Thoms, E. M. Peters, E. C. Siemer, John W. Linfert, Robert Ramsey.

A. W. Morris Mfg. Co., Philadelphia, Pa.; $10,000; metals; by A. W. Morris, Haines D. Boyer, E. J. Henderson, W. W. McKirn, Philadelphia, and B. Frank Harpel, Topton, Pa.

General Pipe Bending & Erecting Co., Pittsburgh; $50,000; by W. Lawrence Jones and James W. Prenter, Pittsburgh, and Walter C. McMinn, Oakmont, Pa.

Alliance Motor Car Co., Alliance, O.; $50,000; by C. C. Mummert, Morris W. Geiger, G. K. Pritchard, R. M. Scranton, J. O. Ellis, C. C. Cline and E. P. Kinne.

Herrick & Cowell Co., New Haven, Conn., manufacturer of paper box and electrotype machinery; $10,000; by Lewis Herrick, William G. Cowell and William M. Parsons.

The Bethlehem Chile Iron Mines Co., Wilmington, Del.; $4,000,000; to mine for iron, copper, coal, coke and

other products; by Herbert E. Latter, Norman P. Coffin, W. J. Maloney.

Archer-McCartney Co., Paterson, N. J.; pattern and model makers, machinists, etc.; $125,000; by D. H. Wilson Jr., R. J. Archer, J. J. McCartney.

The Holloware Process Co., Camden, N. J.; mechanical and electrical engineer, metal worker, etc.; $50,000; by J. A. Lewis, M. C. Ryan, F. C. Meeteer.

United Neverfall Horseshoe Pad Co., North Bergen, N. J.; to manufacture shoe pads, horseshoes, etc.; $500,000; by J. M. Ehrlich, J. T. Booth, D. Cruice, New York City.

Benton-Atlas Valve Co., Newark, N. J.; plumbing engineer, mill and factory supplies, etc.; $150,000; by D. L. Dalrymple, Newark; G. H. Benton, W. A. Coles, Metuchen.

G. H. Manville Pattern & Model Co., Waterbury, Conn.; $5,000; to manufacture patterns and models of wood and metal; by George Manville, Arthur Ells and Edna M. Blodgett.

Walker G. Ruggles Co., Boston; manufacturs and mill supplies; $20,000; directors: W. G. Ruggles, president; Charles B. Klingeman, treasurer, and G. McAnaul.

C. & J. Mfg. Co., Boston; to manufacture suction and vacuum cleaners, etc.; $75,000; directors: George E. Parlier, president; Charles M. Jentins, E. W. Billings.

Adamant Battery Co., Boston; to manufacture storage batteries, etc.; $20,000; directors: William L. Walker, president and treasurer; R. D. Barlow, A. G. Grant.

National Sheet Metal Mfg. Co., St. Louis, to manufacture sheet metal products, $50,000; by Geo. F. Carraher, Louis J. Powers, Vincent McShane.

The Mulholland Hatch Fastener Co., Cleveland; manufacturing and sale of hatch fasteners and other such devices; $10,000; Joseph J. Klein, Edith A. Close, E. E. Rodd, S. M. Davis, George B. Harris.

Increased Capital

The Union Mfg. Co., New Britain, Conn., is increasing its capital stock to $500,000.

The Thompson Electric Co., Cleveland, is increasing its capital from $10,000 to $50,000.

The Imperial Brass Mfg. Co., Chicago, has increased its capital from $100,000 to $200,000.

The Columbus Iron & Steel Co., Columbus, O., has increased its capital from $1,000,000 to $1,500,000.

The National Enameling & Mfg. Co., Youngstown, O., is increasing its capital from $25,000 to $100,000.

The Federal Motor Supply Co., Cincinnati, is decreasing its capital from $250,000 to $150,000.

The Wyandotte Foundry Co., Detroit, has increased its capital from $26,250 to $50,000.

The Kerite Insulated Wire & Cable Co., of Seymour, Conn., is increasing its capital stock from $200,000 to $300,000.

The United Foundry & Machine Co., Bridgeport, Conn., is increasing its capital stock from $200,000 to $250,000.

The Sidney Tool Co., Sidney, O., advises that the recent increase in its capital from $100,000 to $150,000 was made to take care of its rapid growth of business which is from 25 to 30 per cent better this year than last. An almost complete line of woodworking machines is manufactured.

The Northern Chemical Engineering Laboratories, Madison, Wis., have filed an amendment to its articles of incorporation, increasing the capital stock from $15,000 to $40,000.

The Heald Machine Co., Greendale, Mass., manufacturer of machinery and machinery tools, has increased its capital stock from $40,000 to $100,000 by the issuance of 600 additional shares of common stock.

The Frost Mfg. Co., Kenosha, Wis., manufacturer of plumbers' goods and wares, has increased its capital stock from $50,000 to $200,000. The additional issue will be used in extensions and expansion of the business, definite plans for which are now being made.

The Bowling Green Quarries Co., Bowling Green, Ky., which has increased its capital stock from $50,000 to $150,000, has reported plans for enlarging its capacity, involving the purchase of additional equipment. Samuel Pickels is general manager.

The M. Rumely Co., La Porte, Ind., manufacturer of farm machinery, recently issued a call for a meeting of stockholders, to act upon a proposal to increase the capitalization of the corporation from $22,000,000 to $32,000,000, which would give the company the largest capitalization of any manufacturing establishment in Indiana.

The Hackney Mfg. Co., St. Paul, Minn., recently amended its articles of incorporation, increasing its capital stock from $600,000 to $1,000,000. This increase was made for the purpose of adding to the facilities for manufacturing plows, and to provide funds for the erection of a modern plant on a new site which was purchased about a year ago. The initial construction work will commence early in the spring, with the erection of a large foundry and machine shop, which will be followed by other buildings in quick succession. The company advises that between Oct. 1, 1912, and Jan. 1, 1913, it booked more orders than were taken during the entire year, ending Oct. 1, 1912.

It was voted at the annual meeting of stockholders of the Fairmont Machine Co., Fairmont, Minn., to place $20,000 to the credit of the surplus fund and pay a dividend of 10 per cent on the stock and to raise the capitalization from $50,000 to $300,000. The value of the plant was shown to be $76,017. During the year 894 engines were sold at an average profit of $29. Officers elected were: President, F. E. Wade; vice president, J. P. Dunning; treasurer, William Hay; secretary, H. E. Woolery.

Structural Contracts

The Converse Bridge Co., Chattanooga, Tenn., has the contract for the construction of four steel bridges at Hattiesburg, Miss.

The J. W. Bishop Co., Worcester, Mass., which has the contract for the erection of new mill buildings for the Ludlow Mfg. Associates, Ludlow, Mass., at a cost of about $450,000, has awarded a contract for 2,000 tons of steel for the work to Levering & Gerrigues, New York.

The Cincinnati office of the Noelke-Richards Iron Works, of Indianapolis and Pittsburgh, has secured the contract for the steel work for the new 16-story building of the Reibold estate, Dayton, O., which will include about 2,000 tons of structural steel. H. Harig & Co., Cincinnati, are the general contractors for this work.

Recent Sales

The Pennsylvania railroad has placed an order with the American Locomotive Co. for 40 superheater consolidation freight locomotives of the 28-S type.

The Jamison Coal & Coke Co., Pittsburgh, has ordered 12 mine locomotives and 30 mining machines from the Jeffrey Mfg. Co., Columbus, O.

The National Iron & Steel Co., Houston, Tex., has closed a contract with the San Antonio & Aransas Pass railroad for 8,000 tons of 50-pound relaying rails, formerly used on the railroad company's main line. The purchaser is said to have paid $250,000 for the rails.

The MacKinnon Boiler & Machine Co., Bay City, Mich., reports the following contracts: A steel plant water space refuse burner 4 feet in diameter and 87 feet high; ten steel plant retorts, each 5 feet in diameter and

20 feet long; 25 retort cars and one transfer car, the latter two orders for shipment to Pitt, Cal.; 2,000 feet 20-inch diameter lined pipe for delivering purposes for Duluth, Minn., parties.

The York Mfg. Co., York, Pa., manufacturer of refrigerating machinery, reports the installation of machinery for the following companies:

Border City Ice & Cold Storage Co., Fort Smith, Ark.; Kent Co., Ltd., Montreal, Can.; Ville Platte Light & Ice Co., Ville Platte, La.; Senor Manuel Arca, Manzanilla, Cuba; Schantz Co., New York, N. Y.; George Wagner, Charleroi, Pa.; Birmingham Coco-Cola Bottling Co., Birmingham, Ala.; Manhattan State Hospital, Wards Island, N. Y.; Powers Commercial Fireproof Building Co., Rochester, N. Y.; Whistle Co., Los Angeles, Cal.; D. Kinnah, Princeville, Ill.; C. E. Scudder, Binghamton, N. Y.; Federal Tool Co., East Boston, Mass.; H. L. Pratt, Residence, Glencove, L. I., N. Y.; Surgeon Bros., Bocas Del Toro, Panama.

The following works are installing, or have installed, Girod electric furnaces:

Rubery Owen & Co., Darlaston, Eng.; Gib. Ansaldo & Co., Genoa, Italy; Putiloff Works, St. Petersburg, Russia; Bethlehem Steel Co., South Bethlehem, Pa.; Krupp & Co., Essen, Germany; Oehler & Co., Aarau, Switzerland; Societe John Cockerill, Seraing, Belgium; Stotz & Co., Kornwestheim, near Stuttgart, Germany; Stahlwerk Becker, Krefeld, Germany; Gutehoffnungshutte, Oberhausen, Germany; Ternitzer Stahlwerk, Schoeller, Ternitz, Austria; Danner & Co., Judenberg, Austria; Ungarisches Staats-Stahlwerk, Diosgyor, Hungary; Simonds Mfg. Co., Lockport, N. Y. Three other American works have signed the Girod electric furnace license contract. Two of the American works will install three ton furnaces, and one of these three ton furnaces will be used exclusively in the manufacture of steel castings. The Bethlehem Steel Co. is installing a ten ton Girod electric furnace.

Among recent sales made by the Westinghouse Electric & Mfg. Co. are the following:

Union Traction Co., of Indiana, for the Mt. Summit sub-station at Anderson, two 3,000 kilowatt rotary converters, and six 100-kva. transformers, together with one 5-panel switchboard; New Castle sub-station, one 3,000-kilowatt rotary converter and 2-panel switchboard; Anderson sub-station, seven 400-kva. transformers, and switching equipment; Lawrence sub-station, three 110-kva. transformers, and switching equipment; Ingalls and Muncie sub-stations, switching equipment; the Power Construction Co., Shelburne Falls, Mass., for the Worcester Consolidated Street Railway Co., nine 300-kilowatt rotary converters, and two 2 000-kilowatt rotary converters, twelve 110 kva. transformers, and six 700 kva. transformers; Eastern Pennsylvania Railways Co., Tamaqua, Pa., 1,500-kilowatt rotary converter with switchboard; three 185 kva. transformers; Edison Electric Illumination Co., Brooklyn, N. Y., one 1,000-kilowatt rotary converter with switchboard, three 367 kva. transformers; Portage Construction Co., Johnstown, Pa., one 300 kilowatt rotary converter with switchboard, three 110 kva. transformers; Kankakee & Urbana Traction Co., Urbana, Ill., one 300-kilowatt rotary converter with switchboard, three 110 kva. transformers; Charleston Traction Co., Charleston, W. Va., two 300-kilowatt rotary converters with switchboard, six 110 kva. transformers; West Penn Traction & Water Power Co., Pittsburgh, Pa., one 400-kilowatt motor generator set.

Bridge News

The Tennessee, Kentucky & Northern Railway Co., it is reported, will erect eight steel bridges on a line of railroad which it plans to build from Sparta, Tenn., to Rock Creek, Tenn. George A. Clark, Sparta, is president.

Ten wooden bridges along the line of the Dominion Atlantic railway, which is practically to be re-constructed by the Canadian Pacific railway, will be replaced by modern steel structures. The Dominion Atlantic runs through Nova Scotia.

The New Brunswick and Maine legislatures probably will endorse the erection of an international bridge at St. Leonard's, on the Upper St. John river, to connect the railway system of that part of the province with those of Maine.

The two big steel bridges erected by the Grand Trunk Pacific railway over Portphyry and Boulder creeks in British Columbia, have just been completed. These, with one exception, are the largest steel bridges on the western division of the Grand Trunk Pacific.

The St. Lawrence Bridge Co., contractor for the superstructure of the big Quebec bridge which is being built across the St. Lawrence river by the Dominion government, has begun operations at the site. It has erected the north anchorage and is now building its camps and laying out its plant for the erection of the steel which will begin next season.

Trade Notes

Rogers Bros., Pittsburgh, have purchased a lathe grinder from the James Clark Jr. Electric Co., Louisville, Ky.

The Standard Underground Cable Co., Ltd., has established new branch offices at Montreal, Quebec and Winnipeg.

Frank Du Vaughn is considering the location of a malleable iron plant in Laporte, Ind.

The Union Electric Welding Co., Toledo, O., has changed its name to the United Wire Co.

The Standard Castings Co., Cleveland is changing its name to the Standard Steel Castings Co.

The firm name of the Star Iron Works, Punxsutawney, Pa., has been changed to that of the Mahoning Foundry Co.

The General Refrigerator Co., Youngstown, O., recently has ordered a universal drill to operate on direct and alternating current, from R. E. Graves, 1307 First National Bank building, Pittsburgh representative of the James Clark Jr. Electric Co., Louisville, Ky.

The West Penn Steel Co., Brackenridge, Pa., has adjusted wages slightly. A number of day laborers are benefited.

The plant of the Independent Steel Co., Kenova, W. Va., is to be advertised for sale on Feb. 10. Jos. S. Miller and S. J. Crum are the receivers.

The plant of the Pittsburgh Foundry & Machine Co., Salem, O., recently destroyed by fire, has been rebuilt.

The general offices of the Crane Co., Chicago, have been located in the company's new building on South Michigan avenue since Jan. 25.

The next meeting of the Boston branch of the National Metal Trades Association, 141 Milk street, Boston, will be held on Wednesday, Feb. 5, and will include a talk on "High Speed Steel".

The Northern Engineering Works, Detroit, founder and manufacturer of electric traveling cranes, hoists, etc., reports its business especially active in the crane and hoisting machinery line.

The Jones & Laughlin Steel Co., Pittsburgh, recently has closed a contract for a hand buffer and grinder with the James Clark Jr. Electric Co., Louisville, Ky.

The New Kensington, Pa., plant of the Aluminum Castings Co., Cleveland, has been abandoned and the patterns and equipment have been shipped to the Cleveland foundry.

The Brunner Foundry & Machinery Co., Peru, Ill., reports having added during the past year several new products to its list, including a portable power plant and a pitless scale. The company reports a very successful year.

The Colonial Supply Co., Pittsburgh, has leased a four-story brick building adjoining its present location, as additional room is necessary to carry the larger stocks necessitated by an increased business.

The American Rolling Mill Co., Middletown, O., has moved its Milwaukee, Wis., office to the Majestic building, in that city. Williams & Wolff are the Milwaukee district representatives of this company.

A large quantity of iron pipe, fixtures, machinery, etc., of the Davis Ore Co., Rowe, Mass., has been sold for scrap. Since the death of H. J. Davis comparatively little work has been done at the mine.

The Indiana Foundry Co., Ltd., Indiana, Pa., manufacturer of foundry hardware and machinery, reports having secured some new business from South Africa, and is at present making extensive shipments to Cuba.

C. S. Witwer, president and general manager of the Joliet Mfg. Co., Joliet,

Ill., says that the company has just closed one of the best years in the history of his 26 years connection with this company, and that the outlook for 1913 is still more flattering.

The Russell Saw & Machinery Co., which is perfecting a patent machine for the manufacture of saws, is to begin operations in Indian Orchard, Mass., in a portion of the plant of the Chapman Valve Mfg. Co.

The Muncie Gas Engine Supply Co., Muncie, Ind., recently doubled its manufacturing capacity and purchased a large amount of new machinery, which includes lathes, type boring mill, drills, compressors, grinding machines, additional motors, etc.

The Kochring Machine Co., Milwaukee, Wis., has opened an office at 50 Church street, New York. The company carries a stock of asphalt mixing apparatus at its eastern warehouse in Newark, N. J. R. E. Brooks has charge of the New York office.

The business of the J. Woodruff Stove Co., Salem, O., discontinued a year ago, has been taken over by Pittsburgh parties and plans are under way to equip the foundry throughout with modern facilities for the manufacture of stove plate. The plant will be operated under the firm name of the Woodruff Stove Co.

The Mount Union Silica Brick Co., Mount Union, Pa., has just completed an additional stock shed and installed some larger equipment, to the extent that its manufacturing facilities have been increased 50 per cent during the past two months. This increase was necessitated by the receipt of large orders and contracts. The plant is being operated both day and night.

The Cincinnati Iron & Steel Co., Cincinnati, has resumed operations after a forced shut-down, due to the recent high water of the Ohio river. During the flood, shipments were made without any delay from the company's foundry and warehouses, by means of a number of barges, and consequently, the filling of orders was not delayed.

The Cincinnati Planer Co., Cincinnati, advises that it has purchased the property on Buck street, that city, which is the location of its old plant before it moved to its present new quarters in Oakley, a suburb. The lot just purchased is 100 x 150 feet, and the old plant at present is occupied by the Acme Machine Tool Co., which company is owned by the stockholders of the Cincinnati Planer Co.

Isaac G. Johnson & Co., Spuyten Duyvil, New York, have equipped a new foundry department, which has added materially to their capacity for manufacturing steel castings. Their recent specialty is cast iron wheels for motor trucks. The metal used in the manufacture of these cast steel wheels is of high grade, meeting the specifications of tensile strength, 70,000 pounds per square inch; elastic limit, 35,000 pounds per square inch.

General Industrial

The Dickinson Malleable Iron Co., Milwaukee, a Wisconsin corporation, has filed notice of dissolution.

The Patterson Foundry & Machine Co., East Liverpool, O., has just completed a new office and assembling building.

Wickes Bros., Pittsburgh manufacturers of and dealers in boilers, engines, and machinery are offering their stock and machinery for sale.

B. H. Alvey, Elizabethtown, Ky., who has invented a new type of motor, is considering plans for the organization of a company to manufacture the device.

The Rumely Products Co. has arranged for the handling of the output of sulky plows, corn planting machinery, etc., of the Grand DeTour Plow Co., Dixon, Ill., at whose plant Rumely engine gang plows are made.

The Standard Sanitary Mfg. Co., Pittsburgh, has declared a regular quarterly dividend on the preferred stock of 1¾ per cent and 1½ per cent on the common stock, both payable at once.

The Noyes Machine Co., South Portland, Me., has opened works in New Brunswick, Can., for the manufacture of propellers. The new plant is under the supervision of Capt. M. D. Thompson.

The Chelmsford Foundry Co., Medford, Mass., has been petitioned into bankruptcy by three creditors with a total of $7,250 claims. The company admits its inability to pay its debts and is willing to be adjudged a bankrupt.

The last of the machinery which formerly constituted the principal property of the Ellery Drill & Tool Co., Portsmouth, N. H., reorganized into the Toledo Drill & Tool Co., has arrived at the new home of the company at Toledo, O.

The John B. Perkins Co., dealer in power plant equipment, and Boston representative of the Hewes & Phillips Iron Co., has assigned for the benefit of creditors. John B. Perkins, head of the assigned firm, died Sunday, Jan. 19.

The last of the machinery from the plant of the Sheet Metal Co., Chicago, has been installed in the plant of Brazil Can Co., Brazil, Ind. The two plants have consolidated under the name of the Brazil Stamping & Mfg. Co. The company is said to have a large number of orders.

The Wisconsin Engine Co., Corliss, Wis., recently filed in federal court a voluntary petition for composition with creditors without adjudication. The Wisconsin Trust Co., of Milwaukee, was appointed receiver. No schedule of assets or liabilities was filed in conjunction with the petition.

J. E. Beckman, of Chicago, president of a new corporation, organized to manufacture transmissions for motor cars and trucks, was at Kenosha, Wis., to negotiate for a site for a plant with the Kenosha Industrial Association. It is said the concern is already manufacturing gears in temporary quarters near Chicago.

The second unit of the Grand Trunk Pacific railway's shops and foundries at Transcona, Man., has been completed, and was formally opened last week, 250 mechanics with their families having been moved en masse from Rivers to Transcona in a special train. When running at full capacity 5,000 men will be employed. The cost of the new plant was $5,500,000.

C. I. De Sola, Canadian representative of the great English shipbuilding firm of Swan, Hunter & Wigham Richardson, has announced that the firm is considering entering the Canadian shipbuilding trade. Mr. De Sola states that if a Canadian navy is to be constructed in Canada the great Wallsend-on-Tyne firm will tender. It built ships last year of a total tonnage of 126,152.

It is reported on good authority that at the annual meeting of the Fairbanks-Morse & Co. stockholders, on Feb. 25, action will be taken in the direction of authorizing several large additions and extensions to the Eclipse works of this company at Beloit, Wis. During the past year the company has erected several new buildings at Beloit, but the Eclipse works are not yet up to the capacity demanded.

The Aluminum Goods Mfg. Co., Manitowoc, Wis., has installed a 30-ton toggle drawing press and considerable other small equipment in order to make its productive capacity commensurate with the demand as shown by book orders. The new press will be used for the manufacture of wash boilers and is so designed that a complete boiler is produced by a single operation. A number of additional specialties will be added to the company's line as soon as the new equipment is ready for operation.

Bids for the Jerome Park filtration plant were opened at the office of the New York City water commission, Jan. 23. The low bid is that of the Keystone

Construction Co., which totaled $5,139,015. The Luke A. Burke Co. bid $5,672,145, and McArthur Bros. $5,783,170. The contract for this work will be held up for some time, pending a thorough investigation of the project by order of the board of estimate. A large amount of machinery for both permanent and temporary use will be required to carry out the improvement.

Max Braudy & Co., Grand Rapids, Mich., have sold their plant in Detroit, covering 12½ acres, to the Detroit Insulated Wire Co., which had to find larger quarters on account of increasing business. The property comprises a large brick office building, two large storage sheds, three railroad sidings, one railroad scale and one team scale. Officers of the Wire company are: President, E. E. Keller; vice president, Joseph H. Hunter; secretary, C. C. Gray, and treasurer, C. A. Midworth.

The Up-To-Date Machine Co., recently organized at Green Bay, Wis., by Dr. C. J. Chloupek and F. C. McKillip, has leased the factory building at Pine and Monroe avenues and will engage at once in the manufacture of power feed-grinding machines for farm use. For several weeks the company has been making preparations for the establishment of a factory, using quarters in the Hudson-Sharp building. The machines are designed by Dr. Chloupek and Mr. McKillip will have charge of production.

The Modern Structural Steel Co., Waukesha, Wis., which recently increased its capital stock from $350,000 to $550,000, advises that this action was taken to care for the increased business of the company, although all of the $550,000 capital stock will not be issued. The company has increased its working capital by sales of stock and thereby placed its business on a better financial footing for the increasing business which is coming to it. The company is a fabricator and erector of structural steel of all kinds and manufactures traveling cranes.

Judge Charles M. Fortune has instructed Worth B. Steel, receiver of the Thatcher A. Parker Co., Terre Haute, Ind., steel fabricator, to dispose of the plant located in that city. This action followed a report filed by the receiver in which he placed the liabilities at $34,172, and reported that at the time the company suspended business the total collections made since taking charge of its affairs amounted to $7,122. The latter amount has been paid to creditors. The plant and its equipment will be sold at private sale. An appraisal of $12,800 has been made on the property.

The new plant of the Western Conduit Co., Struthers, O., began operating last week in the remodeled establishment formerly occupied by the Struthers works of the American Sheet & Tinplate Co. About 60 men will be employed at the start, the number being increased as other departments are added. L. J. Campbell of the Youngstown Sheet & Tube Co., Youngstown, O., is president of the concern. Various kinds of electrical equipment will be manufactured. Officials state that orders are now booked that will keep the plant busy for several months at least.

In its report of the past year's operation to the Citizens' Association of Manitowoc, Wis., the Aluminum Goods Mfg. Co., of Manitowoc, which received valuable assistance from the association, shows an increase of more than 105 per cent in wages paid during the year and of 60 per cent in number of employes for the first year. The company gave the association a guarantee to expend $350,000 in wages within six years' time, and the report shows that the first year alone $101,375 was paid out in wages, which is far above the average required. The company employs 280 men. The workshops are built on a site donated by the Citizens' Association.

The sum of $100,000 has been pledged by the board of directors of the Simmons Mfg. Co., Kenosha, Wis., manufacturers of beds, springs, etc., employing 3,000 men in the Kenosha factory alone, for the purpose of preventing accidents and increasing the safety of workmen. At a banquet of 80 of the company's foremen and superintendents, the company's plans were announced. An "efficiency service" will be established at once to outline and execute the plans for minimizing accidents and promoting the comfort and convenience of employes. The Simmons plan is said to be the most elaborate ever attempted by a Wisconsin corporation in behalf of its employes.

Announcement is made that the title of the new organization to succeed the United States Motor Co. will be the Maxwell Motor Co. This company has acquired by purchase the Maxwell-Briscoe plant at Auburn, R. I., Tarrytown, N. Y., and Newcastle, Ind., the Brush Mfg. Co. plants at Detroit; Alden-Sampson Co., Detroit, Flanders Motor Co., Detroit; Stoddard-Dayton Co., Dayton, the big parent factory at Hartford, Conn., and several minor plants. The new company has a capitalization of $37,000,000, with $3,000,000 working capital. Walter E. Flanders, is president; Wm. F. McGuire, vice president; Carl Tucker, vice president and treasurer; M. B. Anthony, controller. The executive offices will be located in Detroit.

The Joseph Soisson Fire Brick Co., Connellsville, Pa., has increased holdings from six to ten plants, which will give the company a possible output of 300,000 bricks daily. Application to increase capital stock of the company from $100,000 to $700,000 has been made. The newly-acquired plants are located at Boliver, West Moreland county, and include the No. 4 works, and the enameled plant of the Boliver Face Brick Co. and the Phoenix and Globe plants of the Phoenix Fire Brick Co. Plants will be managed through the Connellsville offices. Other plants of the company are located as follows: Volcano; Kingston; Columbia; Moyer; Davidson; and Layton. The Columbia plant was purchased recently from the Ligonier Silica Brick plant.

The Woodhouse Chain Works, Trenton, N. J., has received a large order for chains from the United States government for use on the Panama canal. The new order will keep the big plant busy for some time. The chains are to be of various lengths from 4 to 500 feet. They will be used to operate the upper guard valves of the locks on the canal. The iron used in the chains will be of a special cast and will be guaranteed to withstand a pulling strain of 134,000 pounds for the 1½-inch, and 26,000 pounds for the 11/16-inch sizes. John Britton, a government official from Washington, put a special link under pressure and it withstood over 154,000 pounds, and then it sheared off instead of breaking. Mr. Britton will have personal charge of the work and will carefully inspect each link in the chains while they are in course of construction.

President T. S. Williams, of the Brooklyn Rapid Transit Co., has outlined to the public service commission of New York the manner in which the proposed $65,000,000 recently borrowed by the company on short-term notes in connection with the tri-borough elevated and subway construction in the metropolis, will be expended. The bulk of this sum will be devoted to new construction and extensions of various lines and a considerable sum will be expended for new equipment. The company is seeking permission to execute a mortgage of $100,000,000, through the Municipal Railway Corporation, its operating corporation, and to issue under it $65,000,000 of 5 per cent bonds, which will meet a loan of

$40,000,000 that the company has already negotiated.

Westinghouse, Church, Kerr & Co., New York, are acting as engineers and constructors for the following work, the materials and equipment for which have been purchased: Brinson Railway, Springfield, Ga., construction of a 14-mile extension to the Brinson railway from Waynesboro to St. Clair, Ga., and a connection with the Central of Georgia railroad, including grading for roadbed, bridges, tracks, sidings, station, telephone lines, etc. Chas. L. Brodt, New York City, construction of extension and improvements to residence known as Maplewood, Fairfax county, Va., including a garage and service plant. John Coughlan & Son, Vancouver, B. C., design and construction of pile pier 690 x 60 and a structural steel shop of timber 360 x 55 with crane runway together with heating, lighting and plumbing facilities. White Sulphur Springs, Inc., White Sulphur, W. Va., design and construction of a power plant for hotel and bath house; building brick and concrete, overhead coal bunkers, stokers, 150-foot self supporting steel stack.

The Providence Engineering Co., Providence, R. I., which has been in the hands of receivers since September, has discharged its outstanding obligations and has resumed business on an active basis, following a complete reorganization. The receivers have been discharged by order of court, the property restored to stockholders, and the company granted permission to accept new contracts. The reorganization was based on the purchase, recently, of the entire capital stock of the company from the United States Motors Co., by which it was owned at the time the latter concern went into receivers' hands last fall. It is expected that the full complement of help, between 500 and 600 men, will soon be employed. Particular attention will be paid by the new management to continuing and further developing the steam engine business, in which the company has been engaged for many years. The business of the small machine department will also be developed as rapidly as possible. The concern was founded in 1829, as the Thurston & Gardner Co., but about 30 years later became known as the Providence Steam Engineering Co. It was incorporated under its present name. Richard A. Robertson is the new president of the company, with James Coulton vice president, Norman Leeds treasurer, and Frank L. Vaughan assistant treasurer and secretary.

Miscellaneous

Fort William, Ont., will shortly ask for tenders for an incinerator plant to cost $35,000.

The Business Men's Club, of Covington, Ky., has taken up the project of building a bridge over the entrance of Eden park. The city council will pass upon it shortly.

The Carnegie Natural Gas Co., a subsidiary to the Carnegie Steel Co., has drilled a well at the Homestead steel works. Gas was struck in the fifth sand and the supply has been unusually heavy.

The Eastern Steel Co. is filling 15 acres of lowlands south of its furnace in Pottstown, Pa., with slag, so that water from the Schuylkill river during freshets will not inundate industrial extensions when made.

The American Creosote Paving Co. have informed the Kingston, Ont., board of works that it will locate its Canadian plant in that city, if the harbor is dredged to allow shipping to go to and from the company's plant and shops.

The manufacture of the new 45-caliber Colt's automatic pistol, with which the United States army is replacing the old blue "six shotter" which has been in use for decades, will be begun in the Sringfield (Mass.) armory about April 1.

The Commercial Association, Galveston, Tex., is considering a proposition recently made by the holder of a patent on a new type of gasoline marine engine, who resides in Bay City, Mich., to establish a manufacturing plant in that city.

The Knox Automobile Co., Springfield, Mass., which recently made an assignment for the benefit of creditors, has been petitioned into bankruptcy by Samuel Eastman, the Hartford Automobile Parts Co., and the Platinide Co., alleged creditors with claims of about $1,000.

An involuntary petition in bankruptcy was filed in Federal court in Chattanooga, Tenn., last week, against the Chattanooga Iron & Wire Works, by the Cincinnati Iron & Steel Co., Cincinnati, O., and the James Supply Co., and J. H. McCollum, of Chattanooga.

That Canada maintains a predominant position in the agricultural implement and machinery trade of Australia, in close competition with the United States, is the statement contained in a report of the Canadian trade commissioner at Melbourne to the Department of Trade and Commerce.

At the sixth annual meeting of the Chicago cement show, held at the Coliseum, Jan. 16 to 23, the iron and steel industries were represented by attractive displays by various subsidiaries of the Steel Corporation, and also by the Smith Wire & Iron Works, Chicago, and the Union Wire Tie Co., Toledo, O., together with a large number of exhibits of concrete-making machinery, motors, trucks and stationary engines.

New York and Chicago bankers have organized the Agricultural Credit Co. with an authorized capital of $4,000,000. The founders of this company are reported to be Hallgarden & Co. and Wm. Solomon & Co., New York City. On the board of directors are bankers of several cities. The new company proposes to purchase the bills receivable of several foreign manufacturing companies, the receivables in this instance being designated as "farmers' notes". Against these notes it is proposed to issue the debentures of the purchasing company, such debentures being designated in this instance as "collateral trust gold notes."

Fires

Fire damaged the plant of the Thomas Booth Metal Works, Oakland, Cal., recently.

Damage estimated at $5,000 was done to the plant of the Dow Wire Works, Louisville, Ky., by fire recently.

The Barnard & Leas foundry, Davenport, Ia., was damaged by fire recently.

The Peoria Milling Co., Peoria, Ill., was recently damaged by fire, with an approximate loss of $35,000.

The building of the Wilmington Foundry Co., Wilmington, Del., was recently damaged by fire.

The lumber and planing mills of the Coghill Co., Boydton, Va., were badly damaged recently by fire.

Fire recently gutted the building of the Western Foundry & Machine Co., at Saskatoon, Sask., the total loss on the plant and buildings, which is partially covered by insurance, being in the neighborhood of $25,000.

Serious damage was done by fire in the engine room and machine shop of the Oskaloosa Mfg. Co., Oskaloosa, Ia., recently. The company makes wagon boxes, shovel boards and other farm utensils.

A warehouse of the Wrought Iron Range Co.'s plant at Natural Bridge road and the Belt railroad tracks, in St. Louis, was damaged by fire, Wednesday night, Jan. 22, the loss being estimated at $2,000. The blaze is believed to have been started by sparks from a passing switch engine.